VS Lighting Solutions for Household Appliances

For Household Appliances

LED Solutions and Lampholders for Ovens, Steam Ovens, Pyrolytic Ovens and Microwaves

LED Solutions and Lampholders for Cooker Hoods

LED Solution for Dishwasher Applications

LED Lamp and Lampholders for Refrigerators

LED Constant-voltage and Constant-current Drivers
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 household appliances.

Employing approximately 1000 people in more than 20 countries, Vossloh-Schwabe is represented all over the world. As a subsidiary of the Japanese Panasonic Group, 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
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For Ovens, Steam Ovens, Pyrolytic Ovens and Microwaves

- **OVERVIEW OF PICTOGRAMS**

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

  **Application field**
  - [Image: pictogram]
  - For ovens, steam ovens, pyrolytic ovens
  - [Image: pictogram]
  - For microwaves

  **Assembly information**
  - [Image: pictogram]
  - Cutout Ø 35.5 mm
  - [Image: pictogram]
  - Cutout Ø 48 mm
  - [Image: pictogram]
  - Cutout 55x70 mm

  **Approvals**
  - [Image: pictogram]
  - CE conformity
  - [Image: pictogram]
  - ENEC approved
  - [Image: pictogram]
  - UL recognized
LEDSpots for Ovens
For cut-out 35.5 mm / 1.398 in
Colour rendering: $R_0 > 80$
Fixing: click-in

**Extreme O**
For cavity lighting
Lens material: borosilicate glass
Beam angle: 60°
Colour temperatures
- LO 004: 3000 K or 4000 K
- LO 001/LO 012: 3000 K or 4500 K
$t_c$ max.: 120 °C / 248 °F
Lumen maintenance: $L70/B50$ 6,000 hrs.
($t_p = 110 °C / 230 °F$)
Leads: PTFE 0.50 mm² / AWG20
Packaging unit: 45 pcs.

<table>
<thead>
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<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>
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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 oven lamp 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 Ovens**

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

- Colour rendering:  $R_\text{d} > 80$
- Fixing:  click-in

---

**Extreme RL**

*For cavity lighting*

- Lens material:  borosilicate glass
- Beam angle:  43°
- Colour temperatures:
  - LO 010:  3000 K or 4000 K
  - LO 011:  3000 K or 4500 K
- $T_{\text{c max.}}$:  120 °C / 248 °F
- Lumen maintenance:  L70/B50 6,000 hrs.  
  ($t_p = 110 °C / 230 °F$)
- Leads:  PTFE 0.50 mm² / AWG20
- Packaging unit:  32 pcs. (H195) / 16 pcs. (H318)

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<th>Typ. luminous flux (lm)</th>
<th>Typ. current mA</th>
<th>Typ. voltage V</th>
<th>Power consumption W</th>
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<td>LO 010 (H318)</td>
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<tr>
<td>LO 011 (H195)</td>
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<td>160</td>
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<td>5.9</td>
<td>4.1</td>
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<td>—</td>
<td>5.9</td>
<td>4.1</td>
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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 oven lamp 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 a proper temperature.
**E14 Lampholders**

- **Temperature rating:** T270/T240 (518/464 °F)
- **Housing material:** LCP/PPS
- **Lamp:** 25 W
- **Lens:** soda-lime glass
- **Connection:** spade connectors
- **Packaging unit:** 150 pcs.
- **Type:** 64327

- **Temperature rating:** T300 (572 °F)
- **Housing material:** porcelain
- **Lamp:** 15 W
- **Lens:** soda-lime glass
- **Connection:** spade connectors
- **Packaging unit:** 250 pcs.
- **Type:** 51212

- **Temperature rating:** T300 (572 °F)
- **Housing material:** porcelain
- **Lamp:** 25 W
- **Lens:** soda-lime glass
- **Connection:** spade connectors
- **Packaging unit:** 200 pcs.
- **Type:** 51211
Lampholders for Ovens

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

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

G4 Lampholders

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

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

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>33850 G9 steatite T350 (662 °F) spade connectors</td>
<td>25 W / 40 W</td>
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<tr>
<td>33855 G9 steatite T350 (662 °F) spade connectors</td>
<td>25 W / 40 W</td>
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</tr>
<tr>
<td>33860 G9 steatite T350 (662 °F) spade connectors</td>
<td>25 W / 40 W</td>
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<td></td>
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</tr>
<tr>
<td>32797 G4 porcelain T300 (572 °F) leads</td>
<td>20 W</td>
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<td></td>
<td></td>
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</tbody>
</table>

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

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 for Lampholders for Ovens

For cut-out 35.5 mm / 1.398 in

**Accessories**

- **Flat glass**
  - Material: soda-lime glass
  - Fixing: bayonet
  - Compatible with:
    - E14 lampholders: 64327, 51212, 51211
    - G9 lampholders: 33850, 33855, 33860
  - Type: 94091

- **Silicone gasket**
  - Material: high-temperature silicone
  - Compatible with:
    - E14 lampholders: 64340, 64350, 64327, 51212, 51211
    - G9 lampholders: 33850, 33855, 33860
    - G4 lampholders: 32797
  - Type: 98094
Lampholders for Ovens

For cut-out 48 mm / 1.890 in
Nominal rating E14: 2/250
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

E14 Lampholders

Temperature rating: T270 (518 °F)
Housing material: LCP
Lamp: 15 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 180 pcs.
Type: 64326

Temperature rating: T270 (518 °F)
Housing material: LCP
Lamp: 25 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 180 pcs.
Type: 64336

Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 15 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 150 pcs.
Type: 51262

Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 25 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 150 pcs.
Type: 51261
**Lampholders for Ovens**

For cut-out 48 mm / 1.890 in  
Nominal rating G9: 2/250  
Contacts: earth spade connector 6.3x0.8  
Fixing: click-in

**G9 Lampholders**

Temperature rating: T350 (662 °F)  
Housing material: steatite  
Lamp: 25 W/40 W  
Lens: soda-lime glass  
Connection: spade connectors  
Packaging unit: 150 pcs.  
Type: 33865
Lampholders for Ovens

For cut-out 55x70 mm / 2.165x2.756 in
Nominal rating E14, G9: 2/250
Contacts: earth spade connector 6.3x0.8
Reflector: aluminium plated steel
Fixing: click-in

E14 Lampholders
Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 25 W
Lens: borosilicate glass
Connection: spade connectors
Packaging unit: 70 pcs.
Type: 51250

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 / 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: 33885
**Lampholders for Ovens**

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

**G9 Lampholders**

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

**G4 Lampholders**

- Temperature rating: T300 (572 °F)
- Housing material: porcelain
- Lamp: 20 W
- Lens: borosilicate glass
- Leads: PTFE 0.75 mm² / AWG20
- Packaging unit: 36 pcs.
- Type: **32775**
Lampholders and Accessories for Steam Ovens

For cut-out 55x70 mm / 2.165x2.756 in
Nominal rating E14, G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

Compatible Lampholders

<table>
<thead>
<tr>
<th>Type</th>
<th>Base</th>
<th>Material</th>
<th>T-rating</th>
<th>Connection</th>
<th>Lamp</th>
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<td>T350</td>
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<td>T350</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
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<td>steatite</td>
<td>T350</td>
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<td>steatite</td>
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<td>20 W</td>
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</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.

Accessories

Metal frame
Material: CrNi
Type: 93195

Flat glass
Material: tempered glass
Type: 94090

Silicone gasket
Material: high-temperature silicone
Type: 98090
Lampholders and Accessories for Pyrolytic Ovens

**For cut-out 55x70 mm / 2.165x2.756 in**
Nominal rating E14, G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

**Compatible Lampholders**

<table>
<thead>
<tr>
<th>Type</th>
<th>Base</th>
<th>Material</th>
<th>T-rating</th>
<th>Connection</th>
<th>Lamp</th>
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<td>T300</td>
<td>leads</td>
<td>20 W</td>
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**Accessories**

**Metal frame**
Material: CrNi
**Type:** 93195

**Flat glass**
Material: tempered glass
**Type:** 94090

**Lytherm gasket**
Material: lytherm
**Type:** 98095

**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.
Lampholders and Accessories for Microwaves

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

Compatible Lampholders and Accessories

Assembled example – Rectangular microwave kit

Lamp

Suitable for lampholders

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

1. Push the lampholder into position until it clicks.
2. Fit the metal grid, 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.

Accessories

Metal frame
Material: CrNi
Type: 93195

Metal grid
Material: inox
Type: 93198

Flat glass
Material: tempered glass
Type: 94090

Silicone gasket
Material: high-temperature silicone
Type: 98090
Lampholders for Microwaves

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

G4 Lampholders
Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 20 W
Lens: soda-lime glass
Leads: PTFE 0.75 mm² / AWG20 (braided metal sleeve)
Packaging unit: 200 pcs.
Type: 32495
LED Solutions and Lampholders

For Cooker Hoods

- OVERVIEW OF PICTOGRAMS

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

**Application field**

- CA: For cooker hoods
- CA: Common anode technology

**Safety information**

- IP20: IP20 protection
- IP40: IP40 protection
- IP54: IP54 protection

**Approvals**

- CE: CE conformity
- ENEC: ENEC approved
- UL: UL recognized
LEDSpots for Cooker Hoods

For cut-out 67.5x25.5 mm / 2.657x1.004 in

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

### Revo

- Lens material: PC
- Beam angle: 60°
- Colour temperatures: 3000 K or 4000 K
- $T_{c, max.}$: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs. ($t_{lp} = 85 °C / 185 °F$)
- 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>
<tr>
<td>LCH038</td>
<td>24 V</td>
<td>120</td>
<td>58</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH041</td>
<td>350 mA</td>
<td>110</td>
<td>—</td>
<td>3.2</td>
<td>1.1</td>
</tr>
<tr>
<td>LCH041*</td>
<td>700 mA</td>
<td>210</td>
<td>—</td>
<td>3.2</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_{lp} = 85 °C / 185 °F$ (4000 K)

* With heat sink

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

**LEDSpots for Cooker Hoods**

For cut-out 63.5x20.5 mm / 2.500x0.807 in

Colour rendering: $R_a > 80$
Fixing: stick-on

**Revo G**

- **Lens material:** PC
- **Beam angle:** 60°
- **Colour temperatures:** 3000 K or 4000 K
- **$t_{c\ max.}$:** 100 °C / 212 °F
- **Lumen maintenance:** L70/B50 50,000 hrs.
- **($t_p = 85 \ ^\circ C / 185 \ ^\circ F$)**
- **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>
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<tbody>
<tr>
<td>LCH036</td>
<td>12 V</td>
<td>120</td>
<td>114</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH039</td>
<td>24 V</td>
<td>120</td>
<td>58</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH042</td>
<td>350 mA</td>
<td>110</td>
<td>—</td>
<td>3.2</td>
<td>1.1</td>
</tr>
<tr>
<td>LCH042*</td>
<td>700 mA</td>
<td>210</td>
<td>—</td>
<td>3.2</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 85 \ ^\circ C / 185 \ ^\circ F$ (4000 K)

* With heat sink

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. Peel off the cover tape
2. Stick the tape on the cooker hood’s metal surface and press down.
3. With that firmly in place, connect the leads.
LEDSpots for Cooker Hoods

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

Revo P

| Lens material: | PC |
| Beam angle: | 60° |
| Colour temperatures: | 3000 K or 4000 K |
| \( t_c \) max.: | 100 °C / 212 °F |
| Lumen maintenance: | L70/B50 50,000 hrs. |
| | \( t_p = 85 °C / 185 °F \) |
| Leads on request: | PVC 0.35 mm² / AWG22 |
| Packaging unit: | 162 pcs. |

<table>
<thead>
<tr>
<th>Type 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 12 V</td>
<td>120</td>
<td>114</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH037 24 V</td>
<td>120</td>
<td>58</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH040 350 mA</td>
<td>110</td>
<td>—</td>
<td>3.2</td>
<td>1.1</td>
</tr>
<tr>
<td>LCH040* 700 mA</td>
<td>210</td>
<td>—</td>
<td>3.2</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at \( t_p = 85 °C / 185 °F \) (4000 K)
* With heat sink

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

**For cut-out 67.5x25.5 mm / 2.657x1.004 in**

- Colour rendering: $R_a > 80$
- Fixing: snap-in clips
- Lens material: PC
- Beam angle: 60°
- Colour temperatures: tuneable white 2700–4000 K
- $t_c$ max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
- ($t_p = 85 °C / 185 °F$)
- Leads on request: PVC 0.35 mm² / AWG22
- Packaging unit: 162 pcs.

### Revo TW

- **Type Input** supply
- **Typ. luminous flux (lm)** 120/135
- **Typ. current (mA)** 185/191
- **Typ. voltage (V)** —
- **Power consumption (W)** 2.2/2.3

<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>LCH046</td>
<td>12 V</td>
<td>120/135</td>
<td>185/191</td>
<td>—</td>
<td>2.2/2.3</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. For further technical information for TW technology see page 42.
**LEDSpots for Cooker Hoods**

For cut-out 63.5x20.5 mm / 2.500x0.807 in

- Colour rendering: $R_p > 80$
- Fixing: stick-on

---

**Revo G TW**

- Lens material: PC
- Beam angle: 60°
- Colour temperatures: tuneable white 2700–4000 K
- tc max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
- $t_p = 85 °C / 185 °F$
- 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>LCH047</td>
<td>12 V</td>
<td>120/135</td>
<td>185/191</td>
<td>—</td>
<td>2.2/2.3</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. For further technical information on TW technology see page 42.

**Mounting instructions**

1. Peel off the cover tape
2. Stick the tape on the cooker hood’s metal surface and press down.
3. With that firmly in place, connect the leads.
LEDSpots for Cooker Hoods

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

**Revo S**

- Lens material: PC
- Beam angle: 70°
- Colour temperatures: 3000 K or 4000 K
- \( t_{c \text{ max}} \): 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
  \( t_p = 85 °C / 185 °F \)
- Leads on request: PVC 0.35 mm² / AWG22
- Packaging unit: 162 pcs.

### Specifications

<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>ICH048</td>
<td>12 V</td>
<td>215</td>
<td>210</td>
<td>—</td>
<td>2.5</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.

For further technical information for TW technology see page 42.
**LEDSpots for Cooker Hoods**

**For cut-out Ø 56 mm / 2.204 in**

- Colour rendering: $R_0 > 80$
- Fixing: snap-in clips

**FlatLine**

- Lens material: PC
- Beam angle: $60^\circ$
- Colour temperatures: 3000 K or 4000 K
- $t_c$ max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
- Leads: PVC 0.35 mm² / AWG22
- Packaging unit: 90 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>LCH028</td>
<td>12 V</td>
<td>105</td>
<td>118</td>
<td>—</td>
<td>1.4</td>
</tr>
<tr>
<td>LCH043</td>
<td>24 V</td>
<td>130</td>
<td>67</td>
<td>—</td>
<td>1.6</td>
</tr>
<tr>
<td>LCH027</td>
<td>350 mA</td>
<td>125</td>
<td>—</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>LCH027</td>
<td>700 mA</td>
<td>235</td>
<td>—</td>
<td>3.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_0 = 85 \, ^\circ C / 185 \, ^\circ F$ (4000 K)

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

**FlatLine TW**

- Lens material: PC
- Beam angle: $60^\circ$
- Colour temperatures: 2700–4000 K
- $t_c$ max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
- Leads: PVC 0.35 mm² / AWG22
- Packaging unit: 90 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>LCH049</td>
<td>12 V</td>
<td>160/170</td>
<td>99/101</td>
<td>—</td>
<td>2.4/2.4</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_0 = 85 \, ^\circ C / 185 \, ^\circ F$

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

For cut-out Ø 56 mm / 2.204 in (FlatLine)
For cut-out Ø 26 mm / 1.024 in (Tiny)

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

**FlatLine AC**

- Lens material: PC
- Beam angle: 60°
- Colour temperatures: 3000 K or 4000 K
- tc max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
  \( \text{tp} = 85 °C / 185 °F \)
- Leads: FEP/FEP double-insulation
  0.25 mm²
- Packaging unit: 90 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>LCH029</td>
<td>230 V</td>
<td>125</td>
<td>—</td>
<td>—</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at \( \text{tp} = 85 °C / 185 °F \) (4000 K)

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

**Tiny**

- Lens material: PC
- Beam angle: 36°
- Colour temperatures:
  - LCH050: 3000 K or 4000 K
  - LCH044: 3000 K, 4500 K or 5000 K
- tc max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
  \( \text{tp} = 85 °C / 185 °F \)
- 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>
<tr>
<td>LCH044</td>
<td>350 mA</td>
<td>125</td>
<td>—</td>
<td>2.8</td>
<td>1</td>
</tr>
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</table>

Tolerances of electrical and optical data: ±10%

Emission data at \( \text{tp} = 85 °C / 185 °F \) (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 for Cooker Hoods

For cut-out Ø 56 mm / 2.204 in
Colour rendering: $R_d > 80$
Fixing: snap-in clips

DiscLine
Lens material: glass
Beam angle: $45^\circ / 55^\circ$
Colour temperatures: 3000 K or 4500 K
$t_c$ max.: 100 °C / 212 °F
Lumen maintenance: L70/B50 50,000 hrs.

$|I_0| = 85 °C / 185 °F$
Leads: PVC 0.35 mm² / AWG22
Packaging unit: 45 pcs.

SmartLine
Lens material: PC
Beam angle: $40^\circ$
Colour temperatures
LCH051: 3000 K or 4000 K
LCH002: 3000 K or 4500 K
$t_c$ max.: 100 °C / 212 °F
Lumen maintenance: L70/B50 50,000 hrs.

$|I_0| = 85 °C / 185 °F$
Leads: PVC 0.35 mm² / AWG22
Packaging unit: 45 pcs.

### Type | Input supply | Typ. luminous flux (lm) | Typ. current (mA) | Typ. voltage (V) | Power consumption (W) |
---|---|---|---|---|---|
LCH006 | 350 mA | 130/125 | — | 3.0 | 1.1 |
LCH006 | 700 mA | 240/230 | — | 3.0 | 2.1 |

Tolerances of electrical and optical data: ±10%
Emission data at $t_0 = 85 °C / 185 °F$ (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 Cooker Hoods

For cut-out Ø 56 mm / 2.204 in

Colour rendering: \( R_a > 80 \)

Fixing: snap-in clips

StartLine

Lens material: PC

Beam angle: 36°

Colour temperatures

<table>
<thead>
<tr>
<th>Type</th>
<th>Colour temperature 1</th>
<th>Colour temperature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCH052</td>
<td>3000 K or 4000 K</td>
<td></td>
</tr>
<tr>
<td>LCH016</td>
<td>3000 K or 4500 K</td>
<td></td>
</tr>
</tbody>
</table>

tc max.: 100 °C / 212 °F

Lumen maintenance: L70/B50 50,000 hrs.

\( t_p = 85 °C / 185 °F \)

Leads: PVC 0.35 mm² / AWG22

Packaging unit: 45 pcs.

IPLine

Lens material: glass

Beam angle: 42° / 52°

Colour temperatures: 3000 K or 4500 K

tc max.: 100 °C / 212 °F

Lumen maintenance: L70/B50 50,000 hrs.

\( t_p = 85 °C / 185 °F \)

Leads: PVC 0.35 mm² / AWG22

Packaging unit: 45 pcs.

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.

<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>LCH052</td>
<td>12 V</td>
<td>140</td>
<td>167</td>
<td>—</td>
<td>2.0</td>
</tr>
<tr>
<td>LCH016</td>
<td>350 mA</td>
<td>110</td>
<td>—</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>LCH016</td>
<td>700 mA</td>
<td>200</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 K)

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

**for Cooker Hoods**

Nominal rating: 2/250  
Connection: For solid and stranded conductors  
0.5–1.5 mm² / AWG20/AWG15

---

**E14 Lampholders**

Temperature rating: T210 (410 °F)  
Housing material: PET GF  
 Colour: black or white  
Connection: push-in twin terminals  
Fixing: insertion  
Packaging unit: 1000 pcs.  
Type: 64365

---

Temperature rating: T210 (410 °F)  
Housing material: PET GF  
 Colour: black or white  
Connection: push-in twin terminals  
Fixing: insertion  
Packaging unit: 1000 pcs.  
Type: 64305

---

Temperature rating: T210 (410 °F)  
Housing material: PET GF  
 Colour: natural white  
Connection: push-in twin terminals  
Fixing: click-in  
Packaging unit: 200 pcs.  
Type: 64314
Lampholders and Accessories for Cooker Hoods

Nominal rating: 2/250
Connection: For stranded conductors with ferrule on bare end of core
Ø 1.4–1.8 mm / AWG15/AWG13

GZ10/GU10 Lampholders
Temperature rating: T270 (518 °F)
Housing material: LCP
Colour: natural white
Connection: push-in twin terminals
Fixing: holes for screws M3
Packaging unit: 1000 pcs.
Type – GU10: 31000
Type – GZ10/GU10: 31010

Temperature rating: T180 [356 °F] / T270 [518 °F]
Housing material: PBT GF / LCP*
Colour: natural white
Connection: push-in twin terminals
Fixing: holes for screws M3
Packaging unit: 1000 pcs.
Type – GU10: 31020
Type – GZ10/GU10: 31030

Temperature rating: T240 (464 °F)
Housing material: steatite
Cover plate material: PPS
Connection: push-in twin terminals
Fixing: holes for screws M3
Packaging unit: 500 pcs.
Type – GU10: 31705
Type – GZ10/GU10: 31755

Accessories
Cover cap
Material: PA GF
Colour: black
Moulded thread: M10x1
Fixing: holes for screws M3
Compatibility: 310..
Type: 97244
LED Solution

For Dishwasher Applications

OVERVIEW OF PICTOGRAMS

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

Application field

For dishwasher applications

Approvals

CE conformity
**LEDSpots for Dishwashers**

For cut-out Ø 20.8 mm / 0.819 in

- Colour rendering: $R_a > 80$
- Fixing: bayonet

**DW**

- Lens material: PSU
- Gasket: silicone
- Colour temperatures: 6500 K
- $t_c$ max.: 100 °C / 212 °F
- Lumen maintenance: L70/B50 50,000 hrs.
- $t_p = 85 °C / 185 °F$
- Electrical connection: RAST 2.5 – 3 ways
- Packaging unit: 160 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>LDW002</td>
<td>6 V</td>
<td>35</td>
<td>122</td>
<td>—</td>
<td>0.7</td>
</tr>
<tr>
<td>LDW001</td>
<td>65 mA</td>
<td>17</td>
<td>—</td>
<td>2.9</td>
<td>0.2</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.

**Mounting instructions**

1. Put the back assembly in place behind the dishwasher wall.
2. Fit the lens and back assembly together, and screw the lens clockwise until it stops.
3. With that firmly in place, connect the leads.
LED Lamp and Lampholders
For Refrigerators

OVERVIEW OF PICTOGRAMS

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

- **Application field**
  - For refrigerators

- **Safety information**
  - IP40 protection

- **Approvals**
  - CE conformity
  - ENEC approved
LED Lamps for Refrigerators

With E14 screwfix

Colour rendering: $R_a > 80$
Fixing: E14 base

- Lens material: plastics
- Beam angle: 120°
- Colour temperatures: 6500 K
- Allowed operation temperature: –15 to 45 °C / –5 to 113 °F
- Packaging unit: 100 pcs.
- Rated average life for
  - T26-1 230 V: 15,000 h at 25 °C / 77 °F (L70/B50)
  - T26-1 110–240 V: 25,000 h at 25 °C / 77 °F (L70/B50)

<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>T26-1 110–240 V</td>
<td>160</td>
<td>—</td>
<td>—</td>
<td>1.5</td>
<td>—</td>
</tr>
</tbody>
</table>

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

Nominal rating: 2/250
Temperature: for applications up to –200 °C / –392 °F
Connection: For solid and stranded conductors 0.5–1.5 mm² / AWG20/AWG15

E14 Lampholders
Temperature rating: T180 (356 °F)
Housing material: PBT GF
Connection: push-in twin terminals
Fixing: insertion
Packaging unit: 1000 pcs.
Type: 64365

Temperature rating: T180 (356 °F)
Housing material: PBT GF
Connection: push-in twin terminals
Fixing: click-in
Packaging unit: 1000 pcs.
Type: 64311

Temperature rating: T180 (356 °F)
Housing material: PBT GF
Connection: push-in twin terminals
Fixing: clipping-in, bayonet
Packaging unit: 1000 pcs.
Type: 64316
Lampholders and Accessories for Refrigerators

Nominal rating: 2/250
Temperature: for applications up to –200 °C / –392 °F
Connection: For solid and stranded conductors 0.5–1.5 mm² / AWG20/AWG15

E14 Lampholders

Temperature rating: T180 (356 °F)
Housing material: PBT GF
Connection: push-in twin terminals
Fixing: insertion, clipping-in, bayonet
Packaging unit: 1000 pcs.
Type: 64308

Temperature rating: T180 (356 °F)
Housing material: PBT GF
Connection: push-in twin terminals
Fixing: lateral push-fit foot
Packaging unit: 1000 pcs.
Type: 64307

Temperature rating: T210 (410 °F)
Housing material: PET GF
Connection: push-in twin terminals
Fixing: clipping-in
Packaging unit: 1000 pcs.
Type: 64360

Accessories

Front gasket: as lamp safety catch and for protection against moisture acc. to IEC 60079-15
Material: Elastomer
Compatibility: 64308, 64316
Type: 98013
LED Constant-voltage and Constant-current Drivers

- **OVERVIEW OF PICTOGRAMS**

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

**Technology**
- **12 V**
  - Constant-voltage operation 12 V

**Safety information**
- **IP20**
  - IP protection (e.g., 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
  - Temperature protection up to 110 °C

**Service life and warranty**
- Minimum service life 50,000 hrs.
- Minimum service life 30,000 hrs.
- Product guarantee 5 years

**Approvals**
- CE conformity
- EAC conformity
- ENEC approved
- RCM approved
- TÜV approved
12 V CV Drivers

**LED Drivers CV 12 V**

Output: max. 12 W or 20 W
Mains voltage: 220–240 V, 50–60 Hz
Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation
Degree of protection: IP20
Protection class II

<table>
<thead>
<tr>
<th>Capacity range</th>
<th>Ref. No.</th>
<th>Output voltage V ± 5%</th>
<th>Output current A</th>
<th>Power factor at full load (230 V)</th>
<th>Efficiency at full load % (230 V)</th>
<th>Max. service life at $t_a$ 65 °C/149 °F</th>
<th>$t_a$ max. °C/°F</th>
<th>Ambient temperature $t_a$ °C/°F</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 W</td>
<td>186204</td>
<td>12</td>
<td>0–1</td>
<td>&gt; 0.57 C</td>
<td>&gt; 89</td>
<td>100,000 h</td>
<td>75/167</td>
<td>-20 to +50 / ~4 to +122</td>
<td>Screw terminals</td>
</tr>
<tr>
<td>20 W</td>
<td>186620</td>
<td>12</td>
<td>0–1.68</td>
<td>&gt; 0.5 C</td>
<td>&gt; 85</td>
<td>50,000 h</td>
<td>75/167</td>
<td>-15 to +45 / +5 to +113</td>
<td>AWG24/AWG15</td>
</tr>
</tbody>
</table>

**186204**

**186620**
### LED CC Drivers

**Output:** max. 7 W, 8.75 W or 20 W  
**Mains voltage:** 220–240 V, 50–60 Hz  
**Safety functions:** electronic short-circuit protection, overload protection, protection against "no load" operation  
**Degree of protection:** IP20  
**Protection class:** II

<table>
<thead>
<tr>
<th>Capacity range W</th>
<th>Ref. No.</th>
<th>Output current mA</th>
<th>Output voltage DC [V]</th>
<th>Power factor at full load (230 V)</th>
<th>Efficiency at full load % (230 V)</th>
<th>Max. service life at max. t₀ point temp. hrs.</th>
<th>t₀ max. °C/°F</th>
<th>Ambient temperature t₀ (°C/°F)</th>
<th>Connection terminals/leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>350 mA</td>
<td>7</td>
<td>350 ±5%</td>
<td>8.4–20</td>
<td>&gt; 0.5</td>
<td>&gt; 70</td>
<td>50,000</td>
<td>65/149</td>
<td>75/167</td>
<td>65/149 – 75/167 leads</td>
</tr>
<tr>
<td></td>
<td>8.75</td>
<td>350 ±5%</td>
<td>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>70/158 AWG13 screw 2.5 mm² /</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>350 ±5%</td>
<td>2–32</td>
<td>&gt; 0.55</td>
<td>87</td>
<td>100,000</td>
<td>60/140</td>
<td>70/158</td>
<td>60/140 – 70/158 AWG13 screw 0.5–2.5 mm² /</td>
</tr>
<tr>
<td>700 mA</td>
<td>5.6</td>
<td>700 ±5%</td>
<td>2.8–8</td>
<td>&gt; 0.5</td>
<td>&gt; 70</td>
<td>50,000</td>
<td>65/149</td>
<td>75/167</td>
<td>65/149 – 75/167 leads</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>700 ±5%</td>
<td>2–25</td>
<td>&gt; 0.55</td>
<td>87</td>
<td>100,000</td>
<td>60/140</td>
<td>70/158</td>
<td>60/140 – 70/158 AWG20/AWG13</td>
</tr>
</tbody>
</table>

### LED Converters and Drivers

- **186342, 186348**  
  - Output: 350 mA  
  - Mains voltage: 220–240 V  
  - Efficiency: > 70%  
  - Ambient temperature: 75/167 °C/°F  
  - Connection: 65/149 – 75/167 leads

- **186519**  
  - Output: 700 mA  
  - Mains voltage: 220–240 V  
  - Efficiency: > 70%  
  - Ambient temperature: 70/158 °C/°F  
  - Connection: 60/140 – 70/158 AWG13 screw 2.5 mm² /

- **186679, 186681**  
  - Output: 700 mA  
  - Mains voltage: 220–240 V  
  - Efficiency: > 70%  
  - Ambient temperature: 70/158 °C/°F  
  - Connection: 60/140 – 70/158 AWG20/AWG13 screw 0.5–2.5 mm² /
Technical Details

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</td>
<td>V</td>
<td>°C / °F</td>
</tr>
<tr>
<td>PVC</td>
<td>Cu/Cu tin-plated</td>
<td>0.35</td>
<td>300</td>
<td>105 / 221</td>
</tr>
<tr>
<td>SI</td>
<td>Cu tin-plated</td>
<td>0.75</td>
<td>300</td>
<td>180 / 356</td>
</tr>
<tr>
<td>FEP</td>
<td>Cu tin-plated</td>
<td>0.75</td>
<td>300</td>
<td>180 / 356</td>
</tr>
<tr>
<td>FEP/FEP</td>
<td>Cu tin-plated</td>
<td>0.25</td>
<td>450/750</td>
<td>180 / 356</td>
</tr>
<tr>
<td>PTFE</td>
<td>Cu tin-plated</td>
<td>0.50</td>
<td>500</td>
<td>180 / 356</td>
</tr>
<tr>
<td>PTFE</td>
<td>Cu nickel-plated</td>
<td>0.75</td>
<td>500</td>
<td>250 / 482</td>
</tr>
<tr>
<td>PTFE</td>
<td>Ni</td>
<td>1</td>
<td>500</td>
<td>250 / 482</td>
</tr>
<tr>
<td>PTFE</td>
<td>Ni</td>
<td>1.5</td>
<td>500</td>
<td>250 / 482</td>
</tr>
</tbody>
</table>

For consultation only

LED spotlights connected in series

LED spotlights connected in parallel

Wiring Diagrams for LED

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

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

Failing to observe these directions lead to irreparable LED damage. 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).
Tuneable White (Common Anode)

The dynamic white or tuneable white technology allows spotlights to change colour from one temperature to another depending on one’s preferences.

All products with the CA mark are tuneable white technology ready and are designed according to the Common Anode (CA) principle, which means that the common anode is connected directly to the positive source and one driving element is connected to each LED array cathode.

For example, the TW driver could apply a PWM signal variable on both channels (warm and cool) to change colour temperature.

Possible configurations to drive a TW CA spotlight

1. Through an external TW controller that communicates with the cooker hood’s motherboard by a predefined digital protocol (typical serial data protocol). The cooker hood’s motherboard takes the input from the user panel and sends data to the TW controller device. This configuration it is necessary to know the cooker hood’s motherboard serial data protocol.

Diagram of an external TW CA control device connection

2. Through a build-in TW CA controller on the cooker hoods’ motherboard. For this configuration we recommend to ask your electronic partner for more information.
## Contacts

<table>
<thead>
<tr>
<th>Market</th>
<th>Address</th>
<th>Phone / Email</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMEA</strong></td>
<td>Via Strada S. Martino, 15</td>
<td>On: +39 0547 98 111 <a href="mailto:vs-i@vsi.vossloh-schwabe.com">vs-i@vsi.vossloh-schwabe.com</a></td>
</tr>
<tr>
<td>Vossloh-Schwabe Italia S.p.A.</td>
<td>47027 Sarsina (FC), Italy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>USA, Canada, Mexico</strong></td>
<td>Via Strada S. Martino, 15</td>
<td>On: +39 0547 98 215 <a href="mailto:francisco.saracino@vsi.vossloh-schwabe.com">francisco.saracino@vsi.vossloh-schwabe.com</a></td>
</tr>
<tr>
<td>Francesco Saracino Sales</td>
<td>47027 Sarsina (FC), Italy</td>
<td>Mobile: +39 380 2675 177 <a href="mailto:francisco.saracino@vsi.vossloh-schwabe.com">francisco.saracino@vsi.vossloh-schwabe.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>South America</strong></td>
<td>Av. Do Cafe, 277 – Bloco – A, 8 andar –</td>
<td>On: +55 11 3889 4137 <a href="mailto:frighetto.guilherme@br.panasonic.com">frighetto.guilherme@br.panasonic.com</a></td>
</tr>
<tr>
<td>Panasonic do Brasil Limitada Sales</td>
<td>Jabaquara CEP: 04311-900</td>
<td>Mobile: +55 11 95968 9099 <a href="mailto:frighetto.guilherme@br.panasonic.com">frighetto.guilherme@br.panasonic.com</a></td>
</tr>
<tr>
<td>Guilherme Covas Frighetto</td>
<td>Sao Paulo, SP, Brasil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Turkey</strong></td>
<td>Perpa Ticaret Merkezi A Blok</td>
<td>On: +90 212 210 1235</td>
</tr>
<tr>
<td>Murat Balcioglu Sales Agent</td>
<td>Kat: 10-11-12 No: 1448</td>
<td>Mobile: +90 532 346 5360 <a href="mailto:muratbalcioglu@vsv.vossloh-schwabe.com">muratbalcioglu@vsv.vossloh-schwabe.com</a></td>
</tr>
<tr>
<td></td>
<td>Okmeydani 34384 Şişli, Istanbul, Turkey</td>
<td></td>
</tr>
</tbody>
</table>
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 has been a member of the global Panasonic group since 2002 and counts as 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 (LiCS) as well as electronic and magnetic ballasts and lampholders.