



**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

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 1000 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 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](http://www.vossloh-schwabe.com)

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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:

#### Application field



For convection ovens



For in-store deck ovens



For combi ovens



For pizza ovens, industrial deck ovens

#### Assembly information



Cut-out  $\varnothing$  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

# PROFESSIONAL OVENS

## LEDSpots

**For cut-out 35.5 mm / 1.398 in**

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



### Application fields



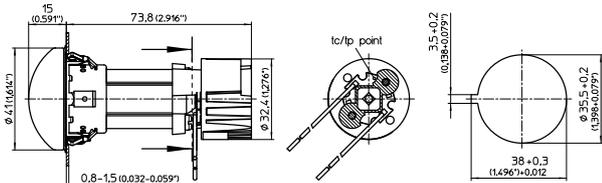
steam kit required



## 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  
 $t_c$  max.: 120 °C / 248 °F  
 Lumen maintenance: L70/B50 5,000 hrs.  
 ( $t_p = 110$  °C / 230 °F)  
 FEP 0.50 mm<sup>2</sup> / AWG21  
 Leads:  
 Packaging unit: 45 pcs.

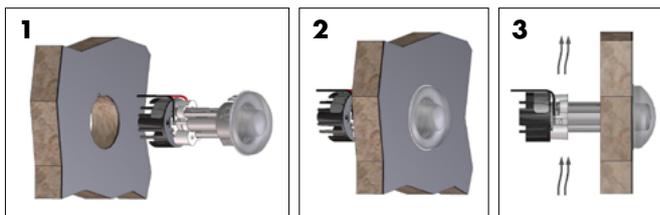


Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 004*	12 V	85	175	—	2.1
LO 001	700 mA	105	—	3.0	2.1

Tolerances of electrical and optical data:  $\pm 10\%$   
 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

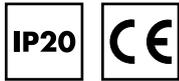
1. Push the LED spot into position until it clicks.
2. With that firmly in place, connect the leads.
3. Make sure that the LED oven lamp's heat sink is skimmed by the air flow at proper temperature.



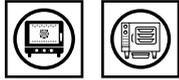
## LED Line

### Fixing plate

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



### Application fields



## Arvés

### For door lighting

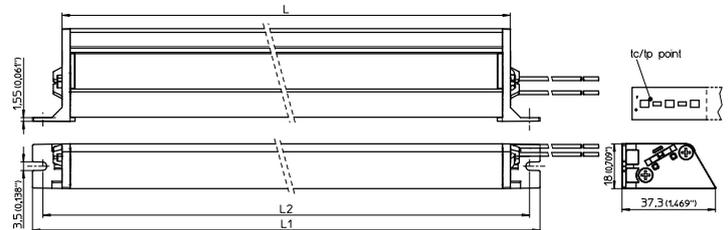
Lens material: PC-HT, max. 140 °C (284 °F)  
 Casing material: PC-HT, max. 140 °C (284 °F)  
 Fixing plates material: PBT, max. 180 °C (356 °F)  
 Beam angle: 50°  
 Colour temperatures: 4000 K (3000 K on request)  
 $t_c$  max.: 120 °C / 248 °F  
 Lumen maintenance: L70/B50 5,000 hrs.  
 ( $t_p = 110$  °C / 230 °F)  
 Leads: FEP 0.50 mm<sup>2</sup> / AWG21  
 Packaging unit: 30 pcs. (LO 013 450),  
 20 pcs. (LO 013 720)



ASYM

Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 013 (450)	12 V	500	520	—	6.3
LO 013 (720)	12 V	800	840	—	10

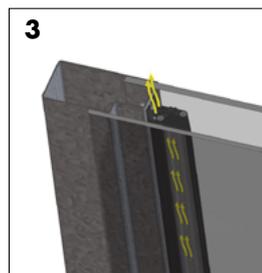
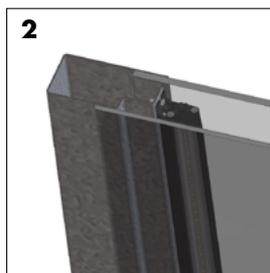
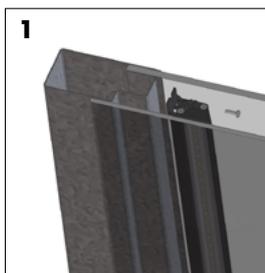
Tolerances of electrical and optical data:  $\pm 10\%$   
 Emission data at  $t_a = 25$  °C / 77 °F (4000 K)  
 The values contained in this data sheet can change due to technical innovations.  
 Any such changes will be made without separate notification.



	Length L		Length L1		Length L2	
	mm	inch	mm	inch	mm	inch
450	450	17.717	480	18.898	472	18.583
720	720	28.347	750	29.528	742	29.213

### 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.





## LEDSpots

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

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



### Application fields

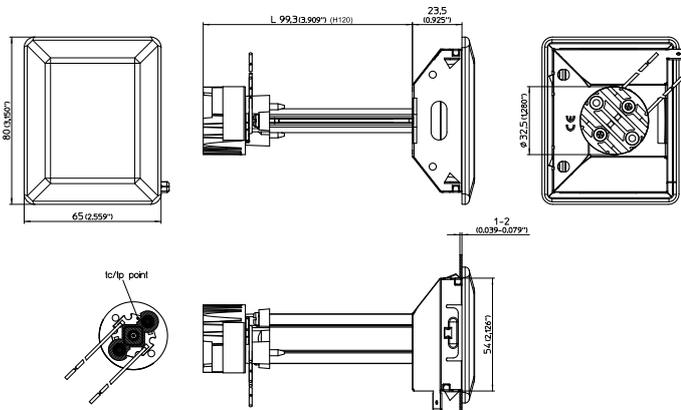


steam kit required

## 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  
 $t_c$  max.: 120 °C / 248 °F  
 Lumen maintenance: L70/B50 5,000 hrs.  
 ( $t_p = 110$  °C / 230 °F)  
 Leads: FEP 0.50 mm<sup>2</sup> / AWG21  
 Packaging unit: 12 pcs. (H120)



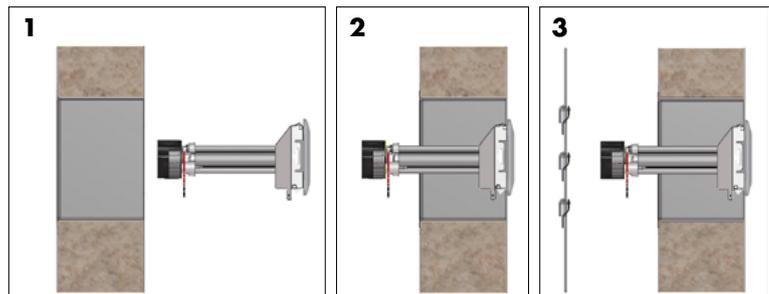
	Length L	
	mm	inch
H1200	99.3	3.909

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:  $\pm 10\%$   
 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 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.



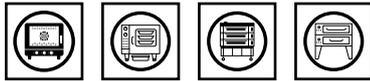
## LEDSpots

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

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



### 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

$t_c$  max.: 120 °C / 248 °F

Lumen maintenance: L70/B50 5,000 hrs.  
( $t_p = 110$  °C / 230 °F)

Leads: FEP 0.50 mm<sup>2</sup> / AWG21

Packaging unit: 18 pcs. (H120) / 30 pcs. (H150)

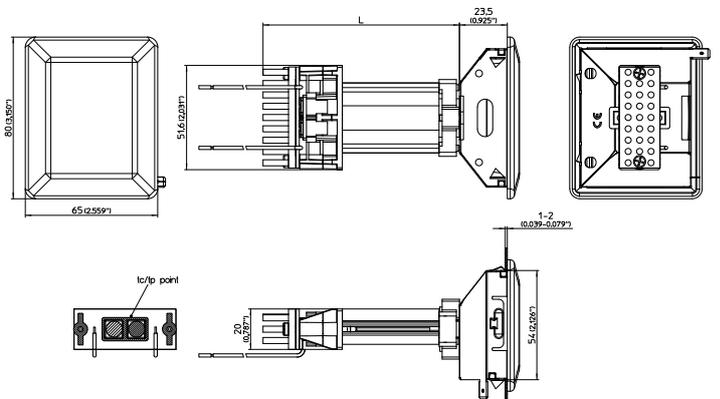
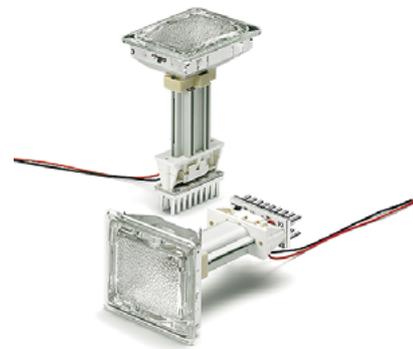
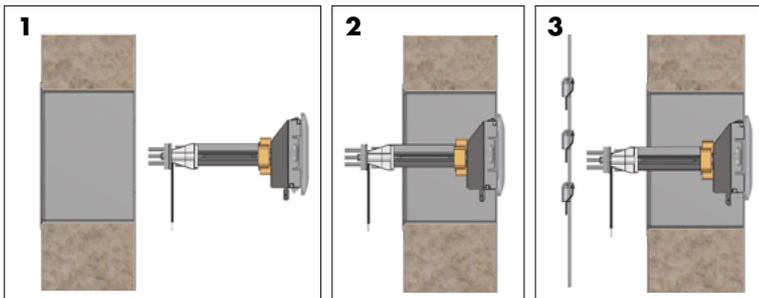


Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 015*	12 V	175	358	—	4.3
LO 021	700 mA	305	—	6.0	4.2

Tolerances of electrical and optical data:  $\pm 10\%$   
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.



Type	Length L	
	mm	inch
H120	96.4	3.795
H150	126.4	4.976



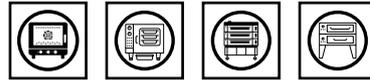
## LEDSpots

### For screw fixation

Colour rendering:  $R_a > 80$   
 Fixing: holes for screws M3



### Application fields

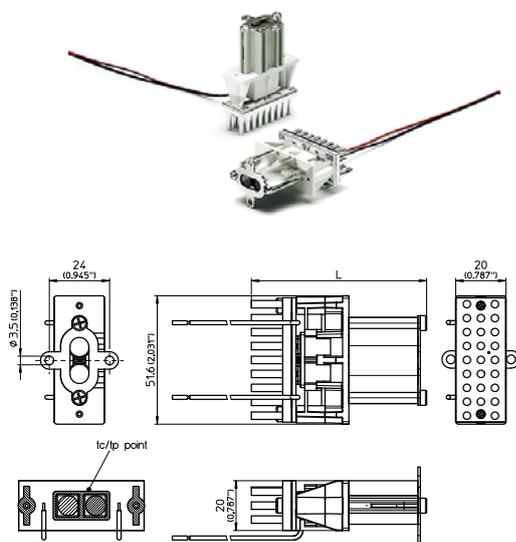


steam kit required

## Extreme HT

### For cavity lighting

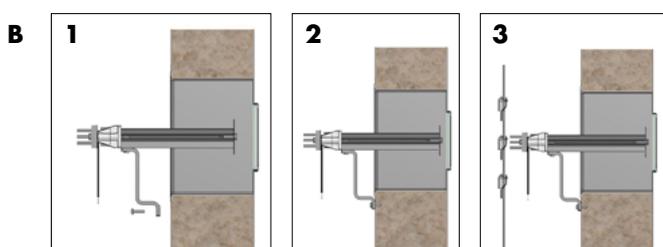
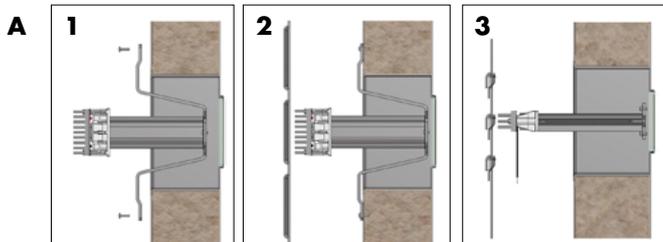
Beam angle:  $35^\circ$   
 Colour temperatures  
 LO 022: 3000 K or 4000 K  
 LO 023: 3000 K or 4500 K  
 $t_c$  max.:  $120^\circ\text{C} / 248^\circ\text{F}$   
 Lumen maintenance: L70/B50 5,000 hrs.  
 ( $t_p = 110^\circ\text{C} / 230^\circ\text{F}$ )  
 FEP  $0.50\text{ mm}^2 / \text{AWG}21$   
 Leads:  
 Packaging unit: 15 pcs. (H97) / 10 pcs. (H67)



Type	Length L	
	mm	inch
H67	67.4	2.654
H97	97.4	3.835

Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 022*	12 V	215	358	—	4.3
LO 023	700 mA	315	—	6.0	4.2

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

## Accessories for LED Solutions

### For replacement

Colour rendering:  $R_a > 80$   
 Fixing: clickin



PROFESSIONAL OVENS

## 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

$t_c$  max.: 120 °C / 248 °F

Lumen maintenance: please refer to Extreme R2 (p. 8)  
 and Extreme HT (p. 9)

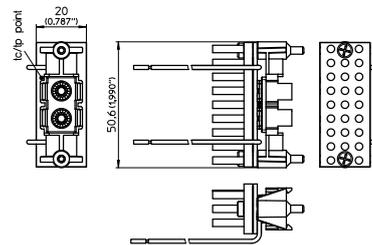
Leads: FEP 0.50 mm<sup>2</sup> / AWG21

Packaging unit: 70 pcs.

Type	Input supply	Power consumption (W)	Only compatible with
LO 017*	12 V	4.3	LO 006, LO 014
LO 018	700 mA	4.2	LO 007, LO 016

Tolerances of electrical data:  $\pm 10\%$

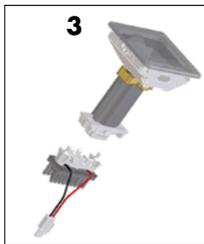
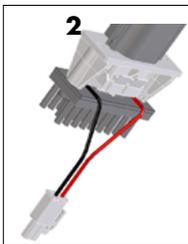
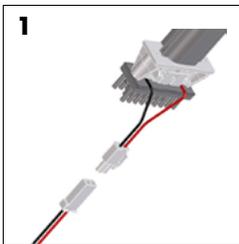
The values contained in this data sheet can change due to technical innovations.  
 Any such changes will be made without separate notification.



### 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.



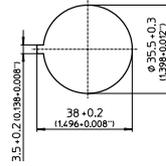
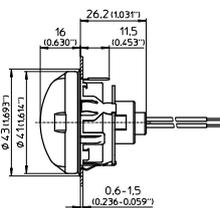
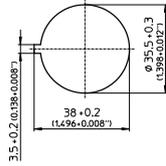
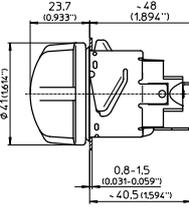
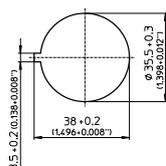
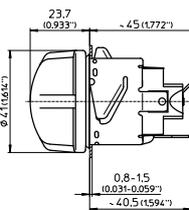
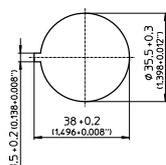
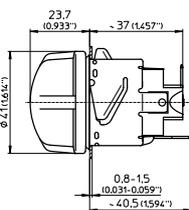
# PROFESSIONAL OVENS

## 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**



## G4 Lampholders

Temperature rating: T300 (572 °F)  
 Housing material: porcelain  
 Lamp: 20 W  
 Lens: soda-lime glass  
 Leads: PTFE 0.75 mm<sup>2</sup> / 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



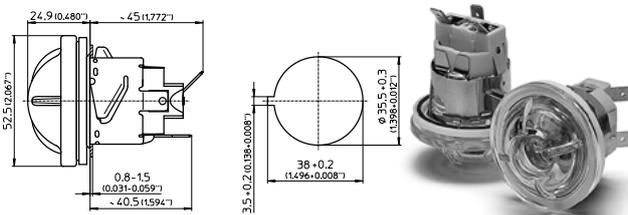
PROFESSIONAL OVENS

## Compatible Lampholders

Suitable for lampholders

Type	Base	Material	Rating	Connection	Lamp
33850	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33855	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33860	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
32797	G4	porcelain	T300 (572 °F)	leads	20 W

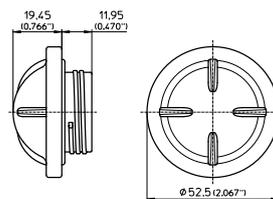
### Assembled example - Round steam kit



## Accessories

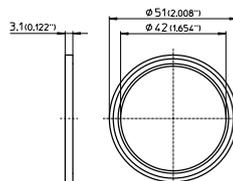
Pagoda glass

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



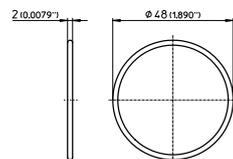
O-ring housing

Material: PTFE  
**Type: 98092**



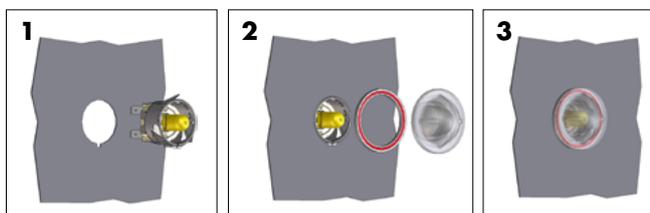
O-ring gasket

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.



# 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**



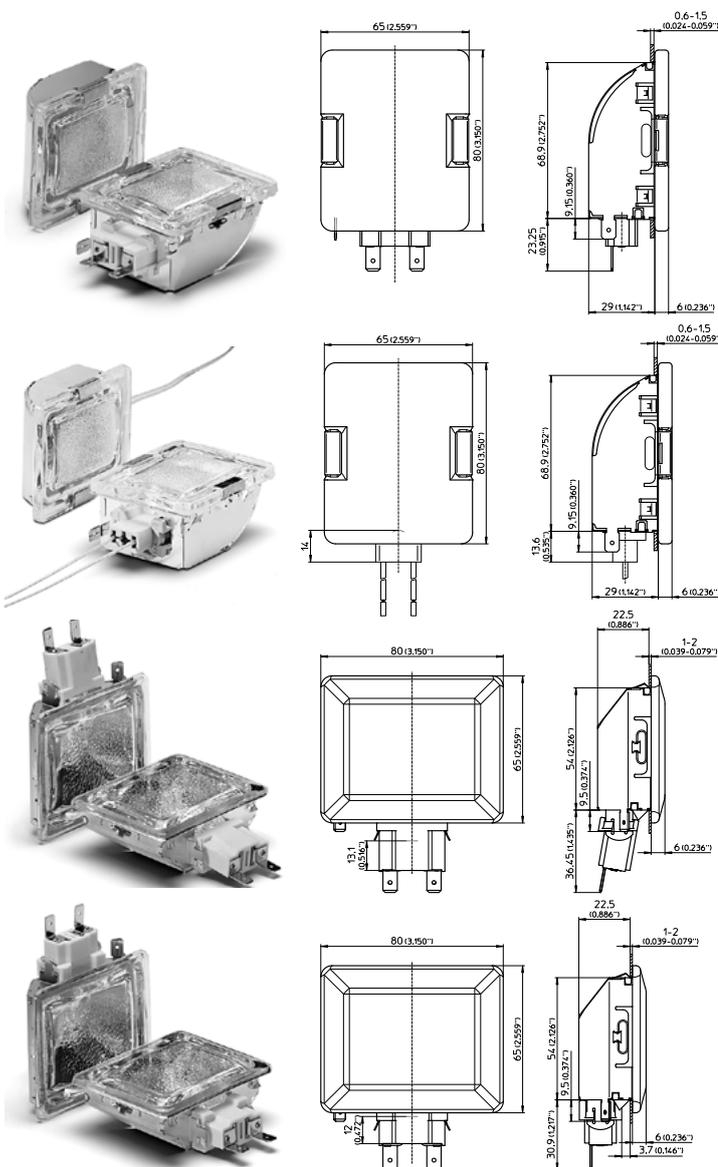
Temperature rating: T350 (662 °F)  
 Housing material: steatite  
 Lamp: 25 W/40 W  
 Lens: borosilicate glass  
 Leads: PTFE 0.75 mm<sup>2</sup> / cURus: FEP AWG20  
 Packaging unit: 70 pcs.  
**Type: 33940**



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

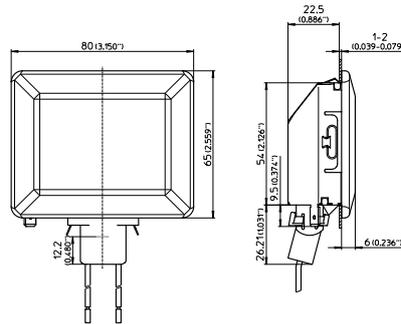
### Application fields



PROFESSIONAL OVENS

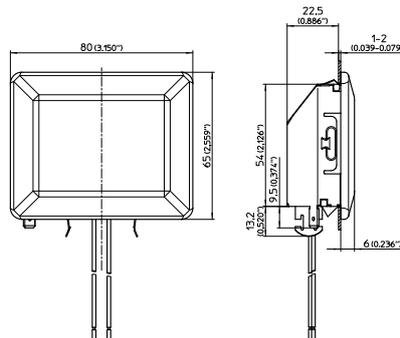
## G9 Lampholders

Temperature rating: T350 (662 °F)  
 Housing material: steatite  
 Lamp: 25 W/40 W  
 Lens: borosilicate glass  
 Leads: PTFE 0.75 mm<sup>2</sup> / cURus: FEP 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 mm<sup>2</sup> / cURus: FEP AWG20  
 Packaging unit: 36 pcs.  
**Type: 32777**



# PROFESSIONAL OVENS

## Lampholders and Accessories

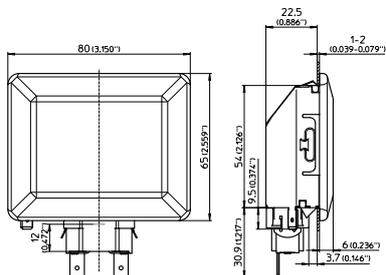
For cut-out 55x70 mm / 2.165x2.756 in

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

### Application fields



### Mounted lampholder with gasket and glass



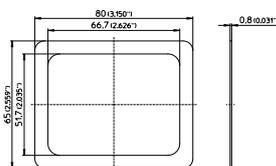
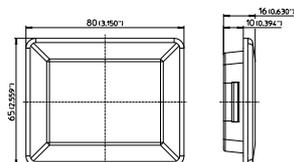
### Compatible Lampholders

Suitable for lampholders

Type	Base	Material	T-rating	Connection	Lamp
33880	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33885	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33980	G9	steatite	T350 (662 °F)	leads	25 W / 40 W
32777	G4	porcelain	T300 (572 °F)	leads	20 W

### 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

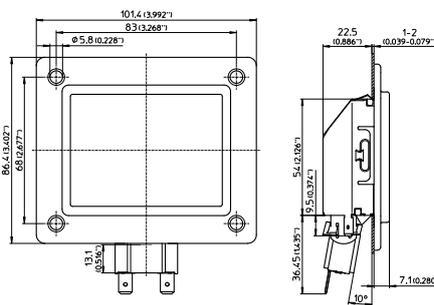


## Compatible Lampholders

Suitable for lampholders

Type	Base	Material	T-rating	Connection	Lamp
33840	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33940	G9	steatite	T350 (662 °F)	leads	25 W / 40 W
33880	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33885	G9	steatite	T350 (662 °F)	spade connectors	25 W / 40 W
33980	G9	steatite	T350 (662 °F)	leads	25 W / 40 W
32777	G4	porcelain	T300 (572 °F)	leads	20 W

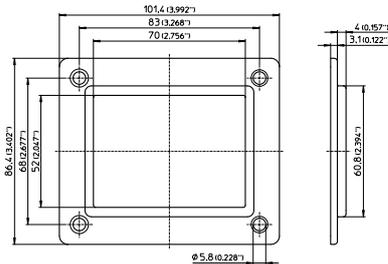
### Assembled example - Rectangular steam kit



## Accessories

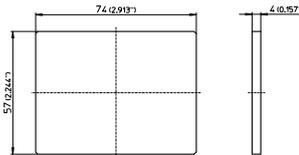
Metal frame

Material: inox  
**Type: 93195**



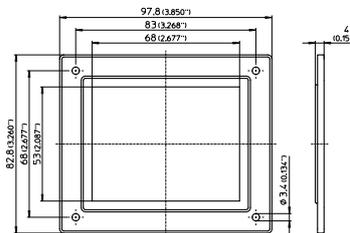
Flat glass

Material: tempered glass  
**Type: 94090**



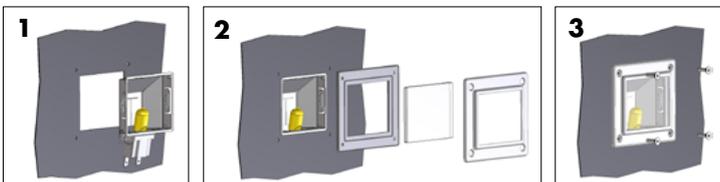
Silicone gasket

Material: high-temperature silicone  
**Type: 98090**



### 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.





## Lampholders and Accessories

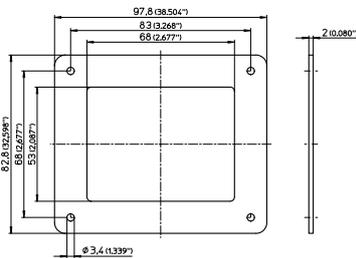
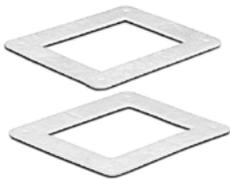
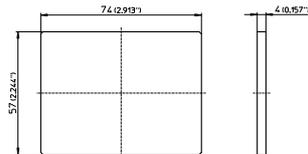
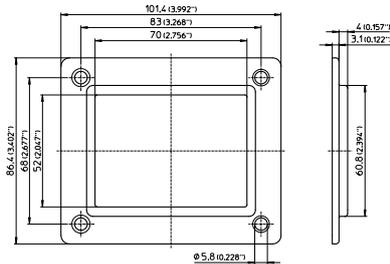
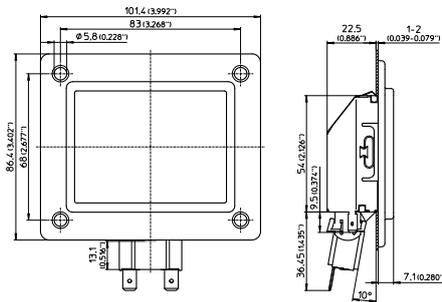
**For cut-out 55x70 mm / 2.165x2.756 in**

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

### Application fields



### Assembled example - Rectangular lytherm kit



## Compatible Lampholders

Suitable for lampholders

Type	Base	Material	T-rating	Connection	Lamp
33840	G9	steatite	T350	spade connectors	25 W / 40 W
33940	G9	steatite	T350	leads	25 W / 40 W
33880	G9	steatite	T350	spade connectors	25 W / 40 W
33885	G9	steatite	T350	spade connectors	25 W / 40 W
33980	G9	steatite	T350	leads	25 W / 40 W
32777	G4	porcelain	T300	leads	20 W

## Accessories

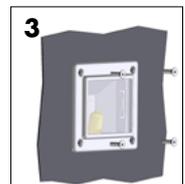
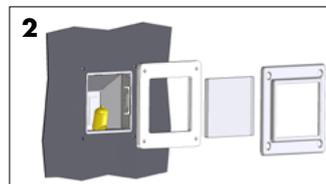
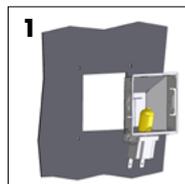
Metal frame  
 Material: inox  
**Type: 93195**

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

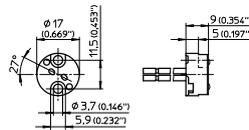
Casing: ceramic  
Cover plate: mica  
Nominal rating: 10/24  
Fixing: fixing holes for screws M3  
Leads: PTFE 0.75 mm<sup>2</sup> / AWG24,  
length: 140 mm / 5.512 in

### Application fields

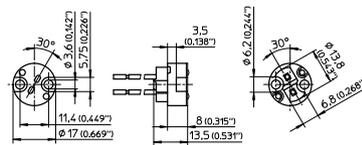


PROFESSIONAL OVENS

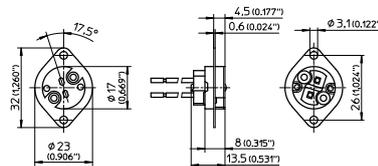
Temperature rating: T350 (662 °F)  
Contacts: Ni  
Packaging unit: 500 pcs.  
**Type: 32400**



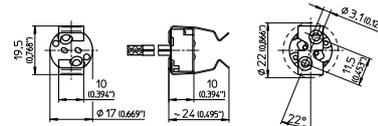
Temperature rating: T300 (572 °F)  
Multipoint contacts: CuNiZn  
Packaging unit: 1000 pcs.  
**Type: 32700**



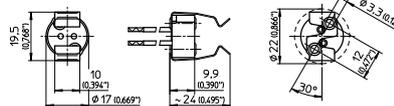
Temperature rating: T300 (572 °F)  
Multipoint contacts: CuNiZn  
Fixing plate: zinc-coated polished steel  
Packaging unit: 1000 pcs.  
**Type: 32720**



Temperature rating: T350 (662 °F)  
Contacts: Ni  
Mounting spring for lamp: stainless steel  
Packaging unit: 1000 pcs.  
**Type: 32480\***



Temperature rating: T300 (572 °F)  
Multipoint contacts: Ni  
Mounting spring for lamp: stainless steel  
Packaging unit: 500 pcs.  
**Type: 32680\***



Mounting springs for lamp  
Material: stainless steel  
Packaging unit: 1000 pcs.  
**Type for GU4: 94071**  
**Type for GU5.3: 94060**

\* for GU5.3





# LED Solutions

## For Refrigerated Cabinets

### 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

#### Safety information



IP20 protection

#### Approvals



CE conformity

#### Assembly information



Cut-out  $\varnothing$  67.5x25.5 mm / 2.657x1.004 in



Cut-out  $\varnothing$  56 mm / 2.205 in



Cut-out  $\varnothing$  26 mm / 1.024 in

#### 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



## REFRIGERATED CABINETS

## Cryo

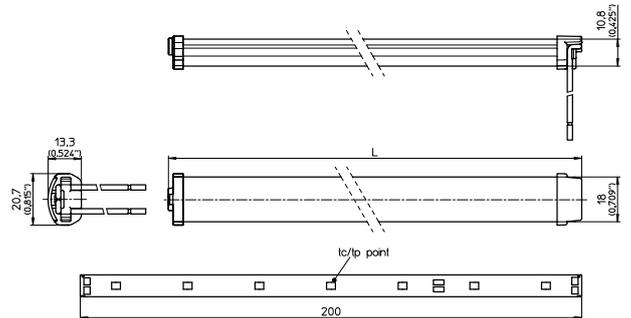
### For undershelf lighting

Lens material: PC  
 Beam angle: 120°  
 Colour temperatures: 5700 K  
 $t_c$  max.: 75 °C / 167 °F  
 Lumen maintenance: L70/B50 36,000 hrs.  
 ( $t_p = 45$  °C / 113 °F)  
 Leads: PVC 0.5 mm<sup>2</sup> / AWG20  
 Packaging unit: 20 pcs.



Type	Input supply	Typ. lumen 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

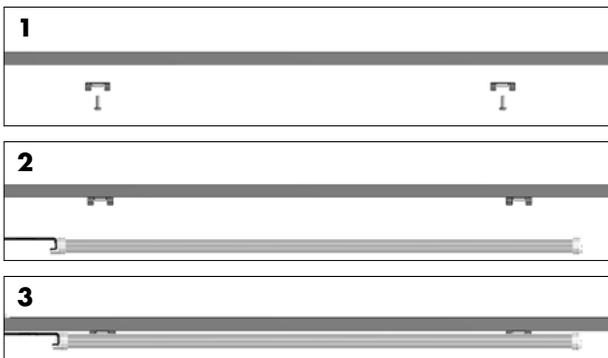
Tolerances of electrical and optical data:  $\pm 10\%$   
 Emission data at  $t_p = 45$  °C / 113 °F (5700 K)  
 The values contained in this data sheet can change due to technical innovations.  
 Any such changes will be made without separate notification.



	Length L	
	mm	inch
Cryo 600	620	24.409
Cryo 1200	1220	48.032

### 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.





## REFRIGERATED CABINETS

### LED Line

#### Fixing plate

Colour rendering:

$R_a > 80$

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)

$t_c$  max.:

75 °C / 167 °F

Lumen maintenance:

L70/B50 36,000 hrs.

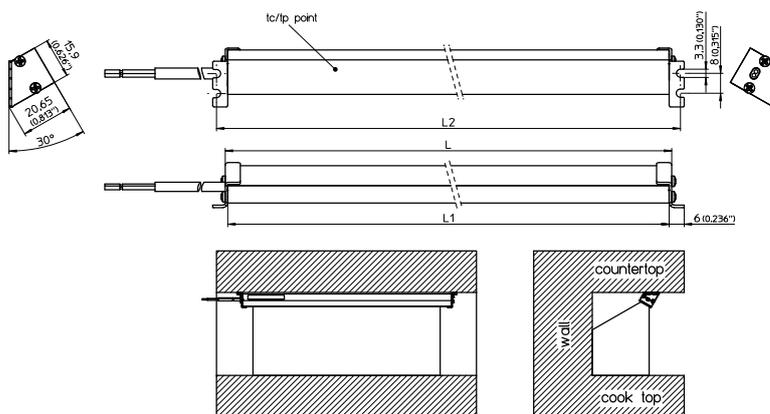
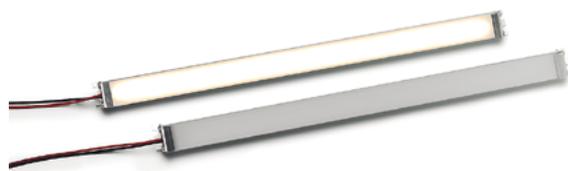
( $t_p = 45$  °C / 113 °F)

Leads:

double core FEP/PVC  
0.35 mm<sup>2</sup> / AWG22

Packaging unit:

30 pcs. or 25 pcs. (for type 250)



Type	Input supply	Typ. luminous 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:  $\pm 10\%$

Emission data at  $t_p = 45$  °C / 113 °F (4000 K)

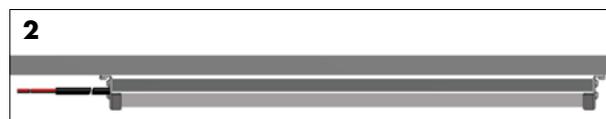
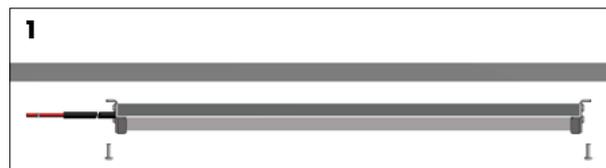
The values contained in this data sheet can change due to technical innovations.

Any such changes will be made without separate notification.

	Length L		Length L1		Length L2	
	mm	inch	mm	inch	mm	inch
250	262	10.315	250	9.843	259	10.197
400	412	16.221	400	15.748	409	16.102
800	812	31.969	800	31.496	809	31.850
1050	1062	41.811	1050	41.339	1059	41.693

#### 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



## REFRIGERATED CABINETS

## Revo

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.  
( $t_p = 85$  °C / 185 °F)  
Leads on request: PVC 0.35 mm<sup>2</sup> / AWG22  
Packaging unit: 162 pcs.



Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LCH035	12 V	120	114	—	1.4

Tolerances of electrical and optical data:  $\pm 10\%$   
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.

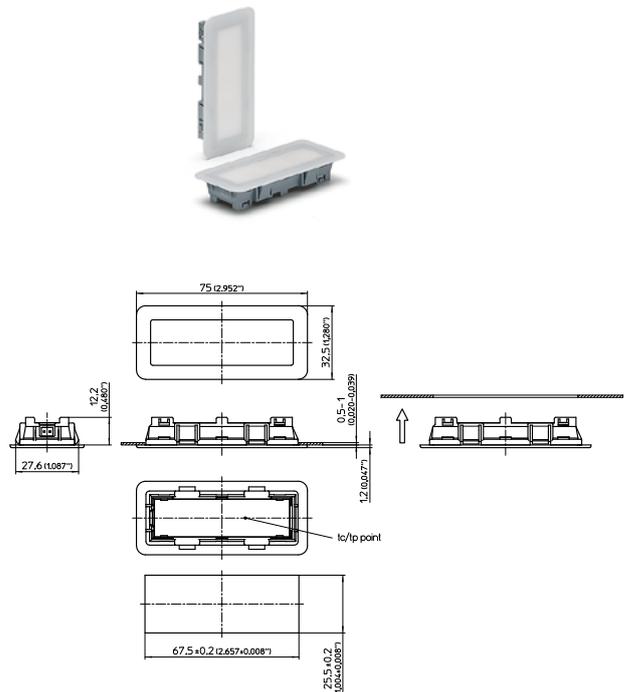
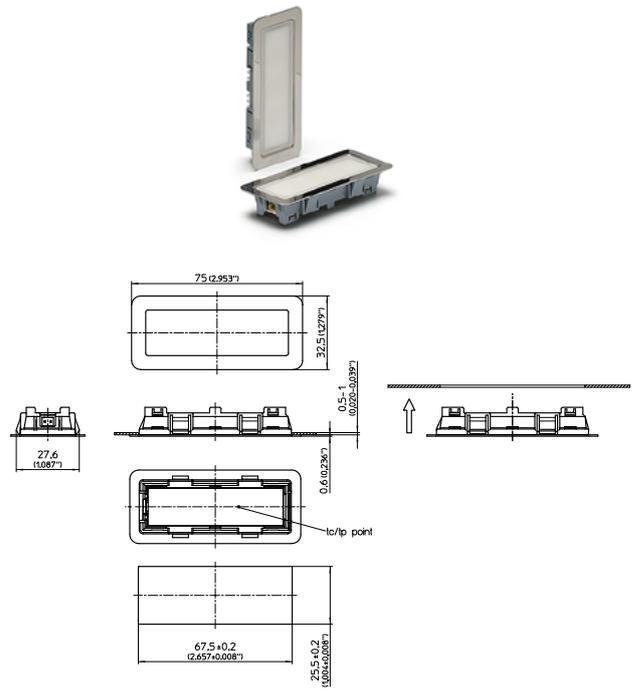
## Revo P

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.  
( $t_p = 85$  °C / 185 °F)  
Leads on request: PVC 0.35 mm<sup>2</sup> / AWG22  
Packaging unit: 162 pcs.



Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LCH034	12 V	120	114	—	1.4

Tolerances of electrical and optical data:  $\pm 10\%$   
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.



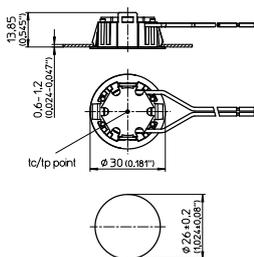
## REFRIGERATED CABINETS

### LEDSpots

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



#### 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  
 $t_c$  max.: 100 °C / 212 °F  
 Lumen maintenance: L70/B50 50,000 hrs.  
 ( $t_p = 85$  °C / 185 °F)  
 Leads on request: PVC 0.35 mm<sup>2</sup> / AWG22  
 Packaging unit: 40 pcs.



Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LCH050	12 V	100	100	—	1.2

Tolerances of electrical and optical data:  $\pm 10\%$   
 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.



# 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:

#### Application field



For flykillers

#### Safety information



IP20 protection



IP65 protection



IP67 protection



UV radiation hazard

#### Assembly information



Cut-out 26 x 111.6 mm / 1.024 x 4.394 in



Cut-out 25.5 x 17.6 mm / 1.004 x 0.693 in

#### Approvals



CE conformity



ENEC approved



UL approved

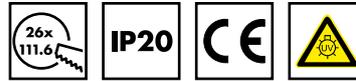
# FLYKILLERS

## 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  
 t<sub>c</sub> max.: 85 °C / 185 °F  
 Radiant flux maintenance: L70/B50 20,000 hrs.\*\*  
 (t<sub>p</sub> = 65 °C / 149 °F)  
 Leads: FEP  
 Packaging unit: 48 pcs.



Type	Input supply	Typ. radiant flux (W)	Av. irradiance*** (W/m <sup>2</sup> )	Typ. voltage (V)	Power consumption (W)
LUV002	350 mA	1.52	0.55	11.4	4.0

Tolerances of electrical and optical data: ±10%

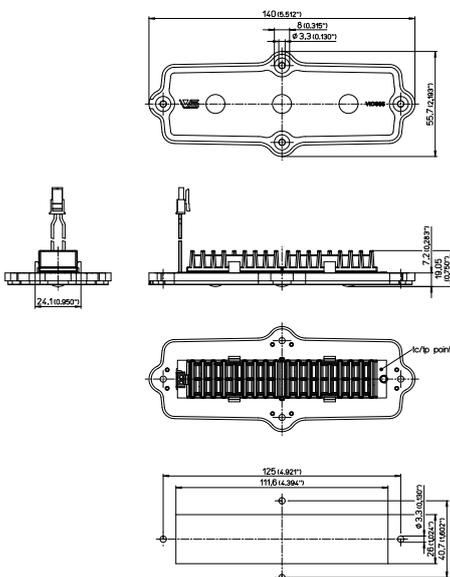
Emission data at t<sub>p</sub> = 65 °C / 149 °F

\* It is advisable to replace the lens every 2,000 working hours (cf. pag. 27 for replacement instructions)

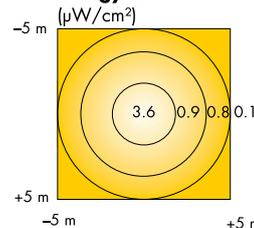
\*\* Refers to the only LED module

\*\*\* At 1 m distance on a 1x1 m<sup>2</sup> surface

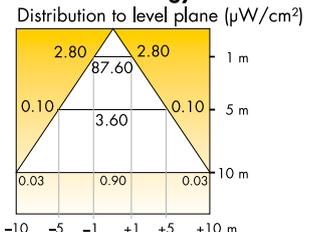
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



### Energy distribution

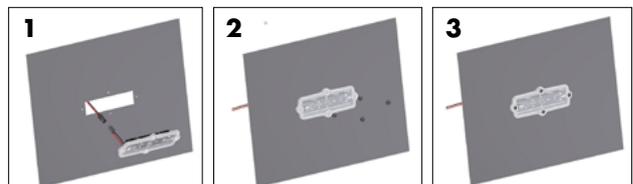


### Irradiation energy



### 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



FLYKILLERS

## VIO365 IP

Lens material: PMMA\*  
 Beam angle: 90°  
 Typ. peak wavelength: 365 nm  
 t<sub>c</sub> max.: 85 °C / 185 °F  
 Radiant flux maintenance: L70/B50 20,000 hrs.\*\*  
 (t<sub>p</sub> = 65 °C / 149 °F)  
 Leads: FEP  
 Packaging unit: 48 pcs.



Type	Input supply	Typ. radiant flux (W)	Av. irradiance*** (W/m <sup>2</sup> )	Typ. voltage (V)	Power consumption (W)
LUV002	350 mA	1.52	0.55	11.4	4.0

Tolerances of electrical and optical data: ±10%

Emission data at t<sub>p</sub> = 65 °C / 149 °F

\* It is advisable to replace the lens every 2,000 working hours (cf. pag. 27 for replacement instructions)

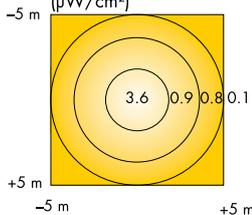
\*\* Refers to the only LED module

\*\*\* At 1 m distance on a 1x1 m<sup>2</sup> surface

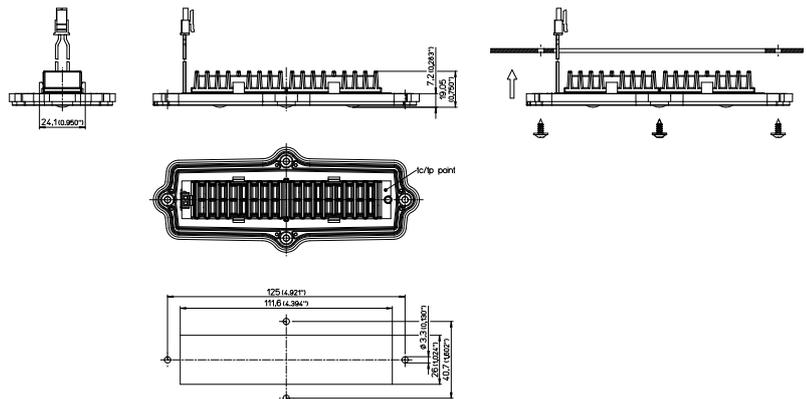
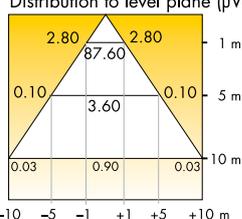
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



### Energy distribution (μW/cm<sup>2</sup>)

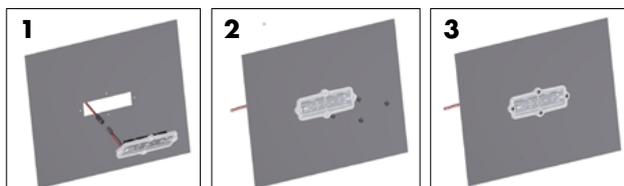


### Irradiation energy Distribution to level plane (μW/cm<sup>2</sup>)



### 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

## FLYKILLERS

### Accessories for LED Solution

#### For replacement

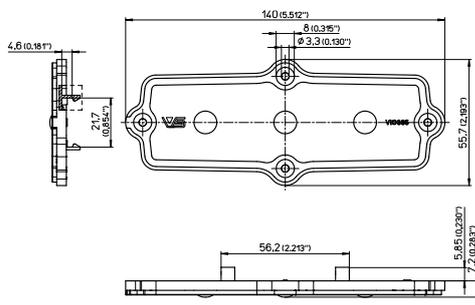
Fixing: click-in



### Lens VIO-LED

Lens material: PMMA  
 Beam angle: 90°  
 Compatible LED products: LUV002  
 Packaging unit: 66 pcs.  
 Type: LUV 003

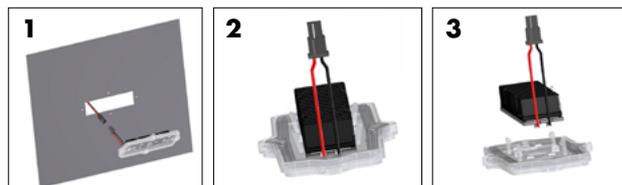
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



#### 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 mm<sup>2</sup> / AWG20

For luminaires of protection class I and II



### Application fields

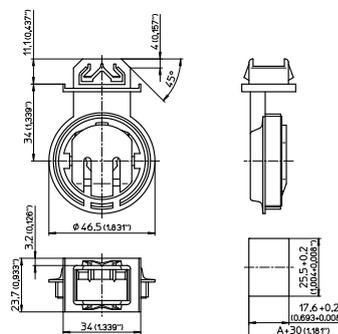


FLYKILLERS

## G13 Lampholders

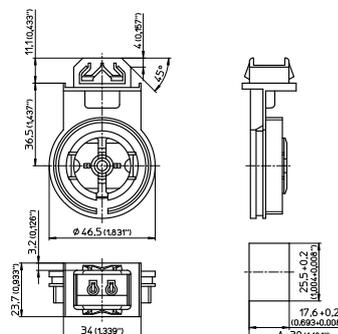
Temperature rating: T140 (284 °F)  
 Casing material: PC  
 Interior part material: PBT GF  
 Connection: push-in terminals  
 Packaging unit: 250 pcs.

**Type: 84175**



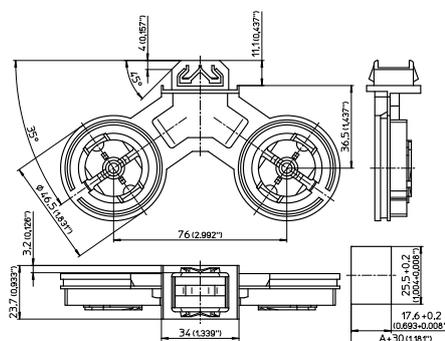
Temperature rating: T140 (284 °F)  
 Casing material: PC  
 Interior part material: PBT GF  
 Connection: push-in terminals  
 Packaging unit: 500 pcs.

**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**



# FLYKILLERS

## Accessories for G13 Lampholders



### Application fields



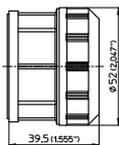
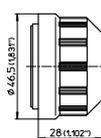
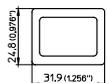
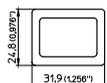
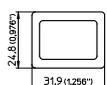
## Accessories

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 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:

### Technology

	Constant-voltage operation 12 V
	Constant-voltage operation 24 V

### Safety information

	IP protection (f.e. IP20)
	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



Suitable for installation in  
furniture and on  
combustible surfaces



Overload protection



Overtemperature protection



Protection against  
"no load" operation



Suitable for  
emergency lighting

### 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



UL approved

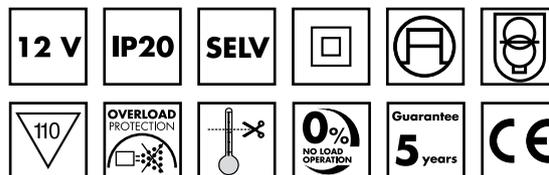


CCC approved

# 12 V CV DRIVERS

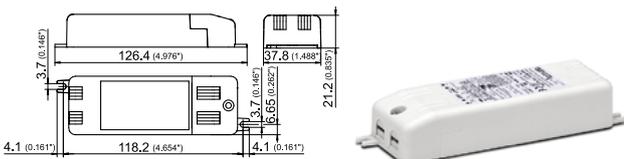
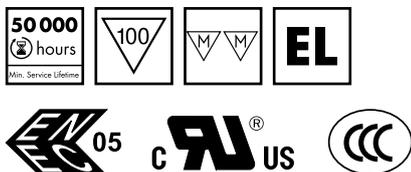
## LED Drivers CV 12 V

Output: max. 10, 12, 20 or 60 W  
 Mains voltage: 110–240 V or 220–240 V, 50–60 Hz  
 Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation

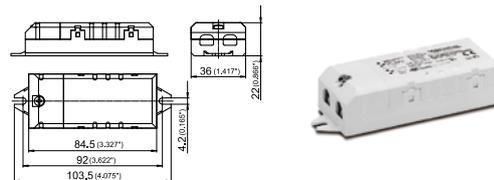


Max. output W	Type	Ref. No.	Mains voltage 50–60 Hz V ± 10%	Output voltage V ± 5%	Output current A	Power factor at full load (230 V)	Efficiency at full load % (230 V)	Max. service life at $t_p$ 65 °C/149 °F	$t_c$ max. °C/°F	Ambient temperature $t_a$ (°C/°F)	Connection Screw terminals
10	EDXe 110/12.074	<b>186981</b>	110–240	12	0–0.834	> 0.6 C	> 75	100,000 h	80/176	-25 to +50 / -13 to +122	0.5–2.5 mm <sup>2</sup> / AWG24/AWG15
12	EDXe 112/12.033	<b>186204</b>	220–240	12	0–1	> 0.57 C	> 89	100,000 h	75/167	-20 to +50 / -4 to +122	0.2–1.5 mm <sup>2</sup> / AWG24/AWG15
20	EDXe 120/12.053	<b>186620</b>	220–240	12	0–1.68	> 0.5 C	> 85	50,000 h	75/167	-15 to +45 / +5 to +113	0.5–1.5 mm <sup>2</sup> / AWG24/AWG15
60	EDXe 160/12.054	<b>186621</b>	220–240	12	0–5	> 0.9 C	> 87	50,000 h	90/194	-15 to +45 / +5 to +113	0.75–1.5 mm <sup>2</sup> / AWG24/AWG15

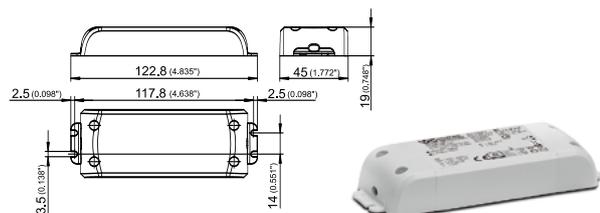
### 186981



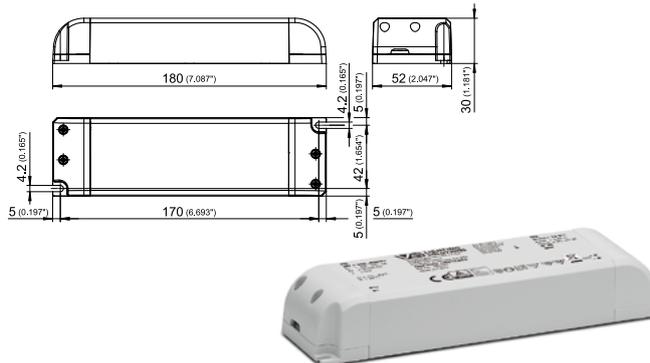
### 186204



### 186620

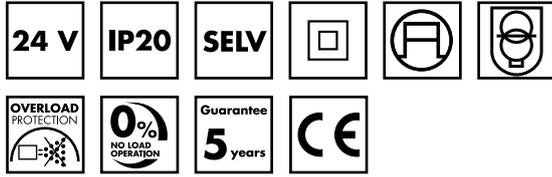


### 186621



## LED Drivers CV 24 V

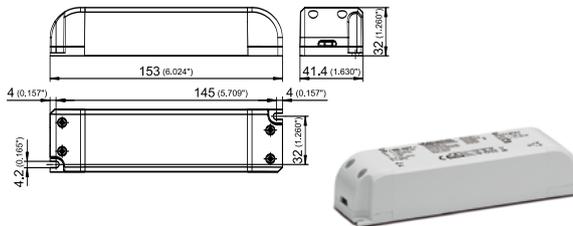
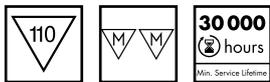
Output: max. 20, 30, 60, 75 or 120 W  
 Mains voltage: 220–240 V, 50–60 Hz  
 Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation



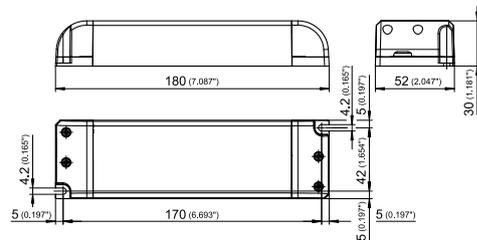
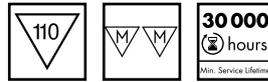
## 24 V CV DRIVERS

Max. output W	Type	Ref. No.	Output voltage V ± 5%	Output current A	Power factor at full load (230 V)	Efficiency at full load % (230 V)	Max. service life at $t_p$ 65 °C/149 °F	$t_c$ max. °C/°F	Ambient temperature $t_a$ (°C/°F)	Connection terminals
30	EDXe 130/24.057	<b>186624</b>	24	0–1.25	> 0.95 C	> 88	60,000 h	80/176	-15 to +45 / +5 to +113	0.5/0.75–1.5 mm <sup>2</sup> AWG24/AWG15
60	EDXe 160/24.058	<b>186625</b>	24	0–2.50	> 0.95 C	> 89	60,000 h	85/185	-15 to +45 / +5 to +113	0.75–1.5 mm <sup>2</sup> AWG24/AWG15
75	EDXe 175/24.059	<b>186626</b>	24	0–3.125	> 0.95 C	> 88	60,000 h	90/194	-15 to +45 / +5 to +113	0.75–1.5 mm <sup>2</sup> AWG24/AWG15
120	EDXe 1120/24.060	<b>186627</b>	24	0–5	> 0.95 C	> 90	60,000 h	90/194	-20 to +45 / -4 to +113	0.75–1.5 mm <sup>2</sup> AWG24/AWG15

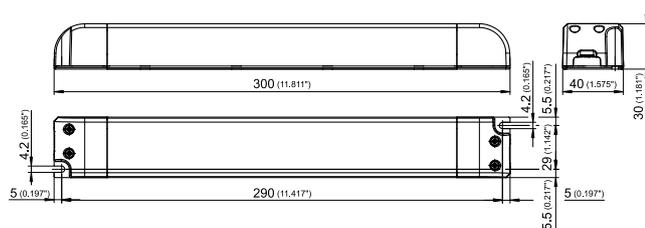
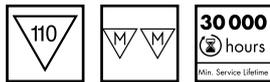
### 186624



### 186625, 186626



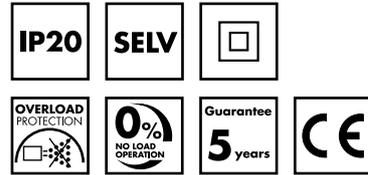
### 186627



# CC DRIVERS

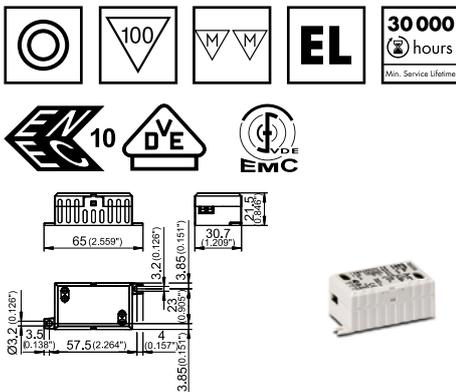
## LED CC Drivers

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

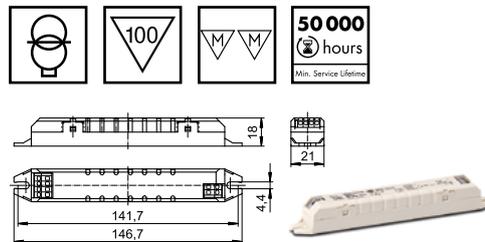


Max. output W	Type	Ref. No.	Mains voltage V (±10%)	Output current mA	Voltage output DC (V)	Power factor at full load (230 V)	Efficiency at full load % (230 V)	Max. service life at max. t <sub>p</sub> point temp. hrs.	t <sub>c</sub> max. °C/°F	Ambient temperature t <sub>a</sub> (°C/°F)	Connection terminals/leads
<b>350 mA</b>											
8.75	ECXe 350.192	<b>186519</b>	220–240	350 ±5%	3–25	> 0.6	> 78	100,000	70/158	80/176	screw 2.5 mm <sup>2</sup> / -13 to +122 AWG13
14	ECXe 350.031	<b>186229</b>	176–264 220–240	350 ±5%	2–40	> 0.55	> 81	100,000	70/158	80/176	push-in 0.2–1.5 mm <sup>2</sup> / -13 to +122 AWG24/AWG15
<b>700 mA</b>											
9	ECXe 700.3153	<b>186916</b>	100–240	700 ±7.5%	5–13	> 0.94	> 78	50,000	75/167	85/185	push-in 0.5–1.5 mm <sup>2</sup> / +5 to +113 AWG24/AWG15

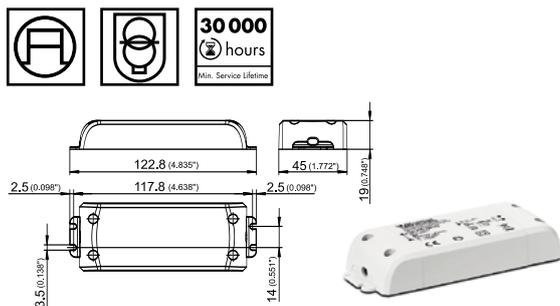
### 186519



### 186229



### 186916



## Independent Electronic Converters - LiteLine

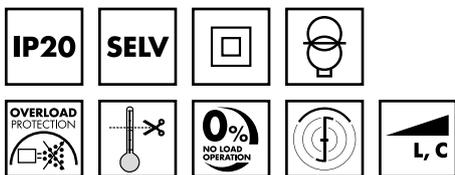
### Electronic safety converters for low-voltage halogen incandescent lamps 12 V

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 mm<sup>2</sup> /  
 0.0039 in<sup>2</sup>  
 (EST 60/12.635 primary: 4 mm<sup>2</sup> /  
 0.0062 in<sup>2</sup>)

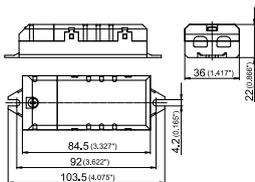
Quantity of terminals: 1x2-poles  
 with integrated cord grip

## TRANSFORMERS

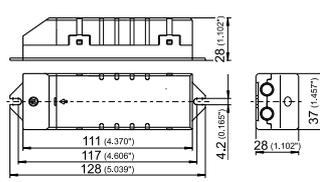


Ref. No.	Type	Capacity range W	Voltage (V) 50–60 Hz		Nominal current A	Power factor	Efficiency %	Ambient temperature t <sub>a</sub>		Max. casing temperature t <sub>c</sub>		Weight g
			prim. (±10%)	secondary				°C	°F	°C	°F	
186173	EST 60/12.635	10–60	220–240	10.2–12	0.258–0.260	0.95	≥ 94	-20 to 45	-4 to 113	85	185	70
186072	EST 70/12.380	20–70	230–240	11.3–11.7	0.30–0.31	0.95	≥ 94	-20 to 45	-4 to 113	70	158	85
186077	EST 105/12.381	20–105	230–240	11.2–11.7	0.435–0.445	0.95	≥ 94	-20 to 40	-4 to 104	85	185	95
186098	EST 150/12.622	50–150	230–240	11.2–11.6	0.595–0.605	0.95	≥ 94	-20 to 45	-4 to 113	85	185	175

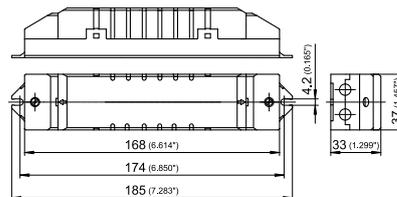
**186173**



**186072, 186077**

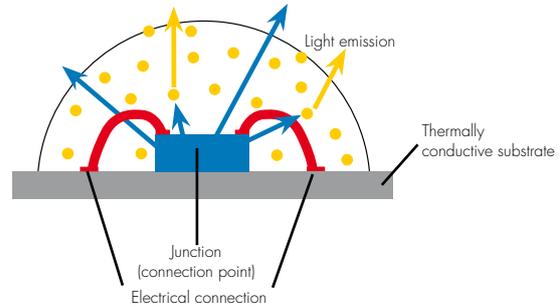


**186098**



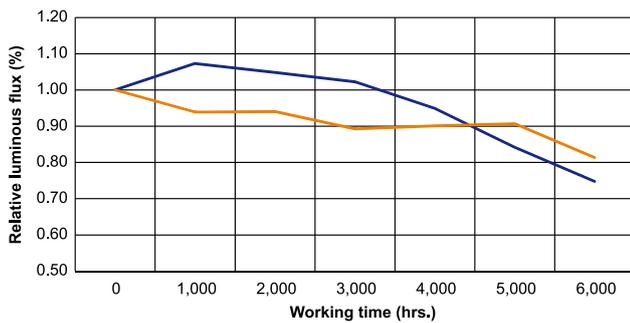
## Service life of an LED in extreme conditions

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").

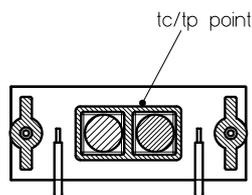


The decrease in luminous flux over the service life determines the quality of an LED solution. Based on the tests carried out in Vossloh-Schwabe's laboratory, the LED solutions' service life, even in extreme conditions such as professional ovens, exceeds 5,000 hrs.

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 (L70). 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 B50, which means that 50% of all LEDs can fall short of the L70 value after 5,000 hours.



— Extreme O LO004 @ tp/tc point 128 °C / 262.4 °F  
 — Extreme O LO012 @ tp/tc point 110.8 °C / 231.4 °F



### 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  $t_p/t_c$  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  $t_c/t_p$  point as showed in the figure below must be measured. This measurement should be equal or below the  $t_p$  in the lumen maintenance section of each lighting solution and must never overstep  $t_c$  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.

Insulation	Conductor Material	Cross-section		Mains voltage V	Max. temperature °C / °F
		mm <sup>2</sup>	inch <sup>2</sup>		
PVC	Cu/Cu tin-plated	0.35	0.0542	300	105 / 221
SI	Cu tin-plated	0.75	0.1162	300	180 / 356
FEP	Cu tin-plated	0.75	0.1162	300	180 / 356
PTFE	Cu nickel-plated	0.75	0.1162	500	250 / 482
PTFE	Cu nickel-plated	1	0.0016	500	250 / 482
PTFE	Ni	1	0.0016	500	250 / 482
PTFE	Ni	1.5	0.0232	500	250 / 482

For consultation only

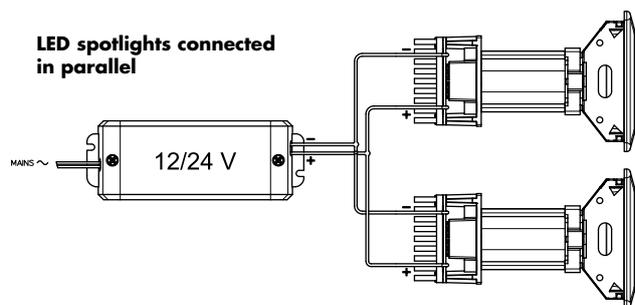
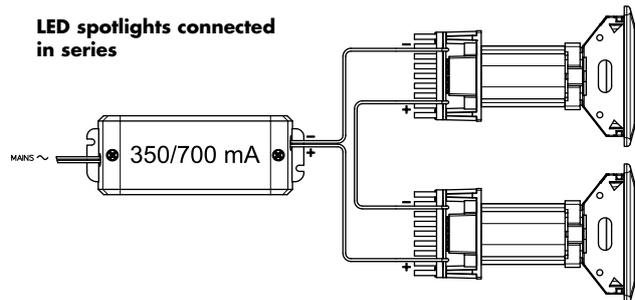
## TECHNICAL DETAILS

### 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).

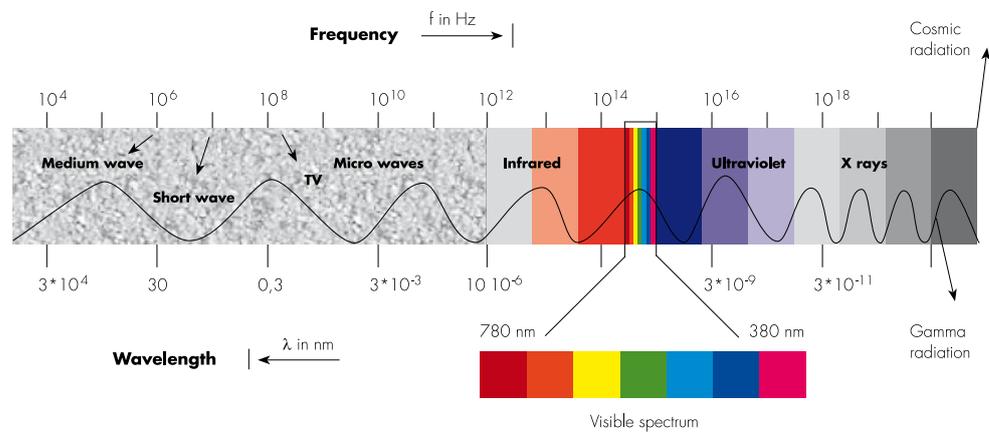


## UV light

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/m<sup>2</sup>). 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.



## Contacts

Market	Address	Phone / Email
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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.



**Vossloh-Schwabe Italia S.p.A.**

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