



## **VS Lighting Solutions**

for Professional Appliances

**UPDATE!**  
Edition 2022-2023

### **For Professional Appliances**

LED Solutions and Lampholders  
for Professional Ovens

LED Solutions for Dishwasher  
Applications

LED Solutions for  
Refrigerated Cabinets

LED Solutions and Lampholders  
for pest controlling

LED Solutions  
for Sterilization

CC and CV LED Drivers  
for LED Solutions

## Vossloh-Schwabe

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

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

### ■ CUSTOMISED SOLUTIONS

#### **Your project, our solution**

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

#### **R&D – ideas take shape**

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

#### **One stop, one shop – In-house creation of complete products**

We offer complete solutions that are made entirely within the Vossloh-Schwabe Group using perfectly matched components with very high efficiency ratings.

#### **In-house photometric testing**

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

#### **Know-how and global presence at your disposal**

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

**[www.vossloh-schwabe.com](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°

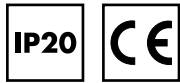


ASYM  
Asymmetrical beam

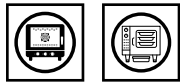
## LED Line

### Fixing plate

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



### Application fields



## PROFESSIONAL OVENS

## Arvés

### For door lighting

Lens material: PC-HT, max. 140 °C (284 °F)  
Casing material: PC-HT, max. 140 °C (284 °F)  
Fixing plates material: PBT, max. 180 °C (356 °F)  
Beam angle: 50°  
Colour temperatures: 4000 K (3000 K on request)  
 $t_c$ : 120 °C / 248 °F  
Lumen maintenance: L70/B50 5,000 hrs.  
( $t_p = 110$  °C / 230 °F)  
Leads: FEP 0.50 mm<sup>2</sup> / AWG21  
Packaging unit: 45 pcs. (LO 013 330),  
30 pcs. (LO 013 450),  
20 pcs. (LO 013 720)



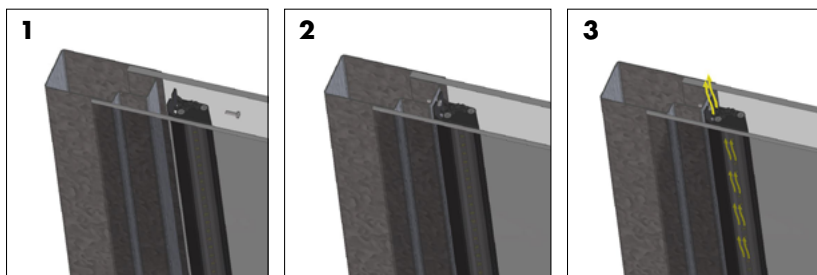
ASYM

Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 013 (330)	12 V	370	520	—	4.6
LO 013 (450)	12 V	500	520	—	6.3
LO 013 (720)	12 V	800	840	—	10

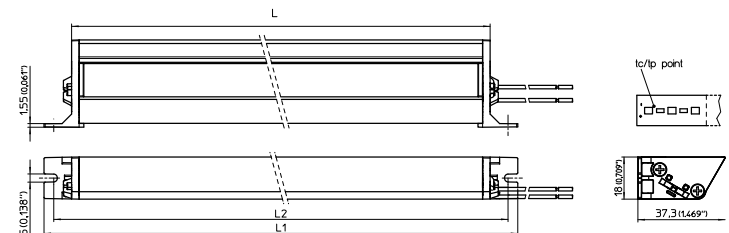
Tolerances of electrical and optical data:  $\pm 10\%$   
Emission data at  $t_a = 25$  °C / 77 °F (4000 K)  
The values contained in this data sheet can change due to technical innovations.  
Any such changes will be made without separate notification.

### Mounting instructions

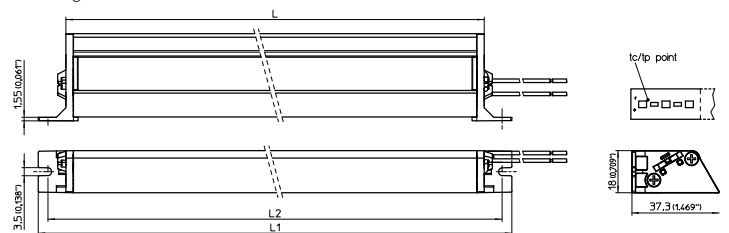
1. Fit the LED luminaire into position and fasten it with two screws onto the door beam.
2. With that firmly in place, connect the leads.
3. Make sure that the LED luminaire is skimmed by the air flow at proper temperature. The luminaire should never be in direct contact with the internal door glass.



cable left side



cable right side

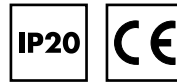


	Length L		Length L1		Length L2	
	mm	inch	mm	inch	mm	inch
330	330	13.00	360	14.17	352	13.85
450	450	17.717	480	18.898	472	18.583
720	720	28.347	750	29.528	742	29.213

# PROFESSIONAL OVENS

## LED Line

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



### Application fields



## AluTen

### For door lighting

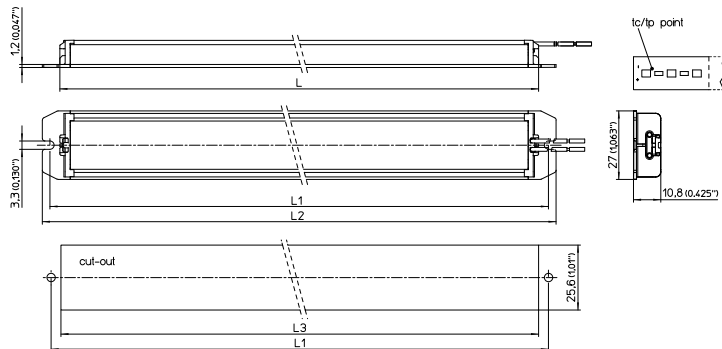
Diffuser: Glass tempered  
 Casing material: Aluminium  
 PCB material: Aluminium  
 Fixing plates material: PBT, max. 180 °C (356 °F)  
 Beam angle: 120°  
 Colour temperatures: 4000 K (3000 K on request)  
 tc: 120 °C / 248 °F  
 Lumen maintenance: L70/B50 5,000 hrs.  
 (tp = 110 °C / 230 °F)

Leads: FEP 0.50 mm<sup>2</sup> / AWG21  
 EPREL Eney Label: E  
 Leads length: 200 mm  
 Packaging unit: 30 pcs (AluTen 110)  
 16 pcs (AluTen 210)  
 45 pcs (AluTen 330)  
 30 pcs (AluTen 450)  
 20 pcs (AluTen 720)



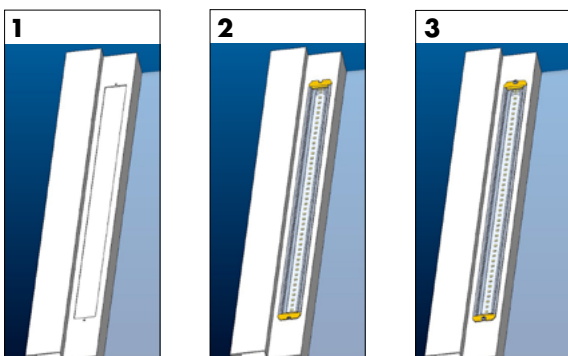
Type	Input supply	Typ. luminous flux (lm)	Power consumption (W)
LO 024 (AluTen 110)	12 V	166	1.6
LO 024 (AluTen 210)	12 V	290	2.6
LO 024 (AluTen 330)	12 V	460	4.6
LO 024 (AluTen 450)	12 V	630	6.3
LO 024 (AluTen 720)	12 V	1021	9

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



Type	Length L		Length L1		Length L2		Length L3	
	mm	inch	mm	inch	mm	inch	mm	inch
AluTen 110	118.7	4.65	126.5	5.0	132.5	5.2	119.5	4.7
AluTen 210	218.7	8.6	226.5	8.9	232.5	9.15	219.5	8.65
AluTen 330	338.7	13.3	366.5	14.4	372.5	14.6	339.5	13.3
AluTen 450	458.7	18.05	466.5	18.3	472.5	18.6	459.5	18.1
AluTen 720	728.7	28.7	736.5	29	742.5	29.2	729.5	28.7

other length on request



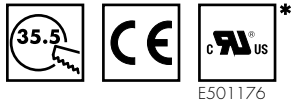
### Mounting instructions

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

## LEDSpots

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

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



### Application fields



## Extreme O

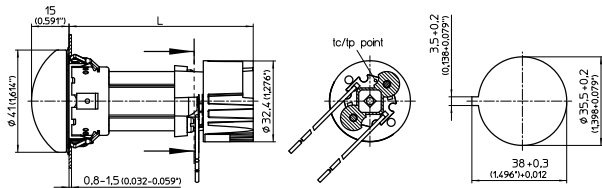
### For cavity lighting

Lens material: frosted borosilicate glass  
Beam angle:  $90^\circ$   
Colour temperatures  
LO 004: 3000 K or 4000 K  
LO 001: 3000 K or 4500 K  
 $t_c$ :  $120^\circ\text{C} / 248^\circ\text{F}$   
Lumen maintenance: L70/B50 5,000 hrs.  
( $t_p = 110^\circ\text{C} / 230^\circ\text{F}$ )  
Leads: FEP  $0.50\text{ mm}^2 / \text{AWG}21$   
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

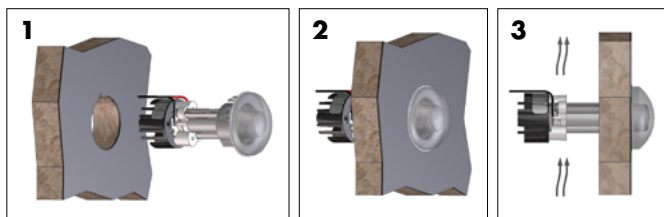
Tolerances of electrical and optical data:  $\pm 10\%$   
Emission data at  $t_p = 85^\circ\text{C} / 185^\circ\text{F}$  (4000/4500 K)  
The values contained in this data sheet can change due to technical innovations.  
Any such changes will be made without separate notification.



Type	Length L	
	mm	inch
H74	73.80	2.90
H114	113.80	4.48

### Mounting instructions

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







## LEDSpots

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

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



### Application fields

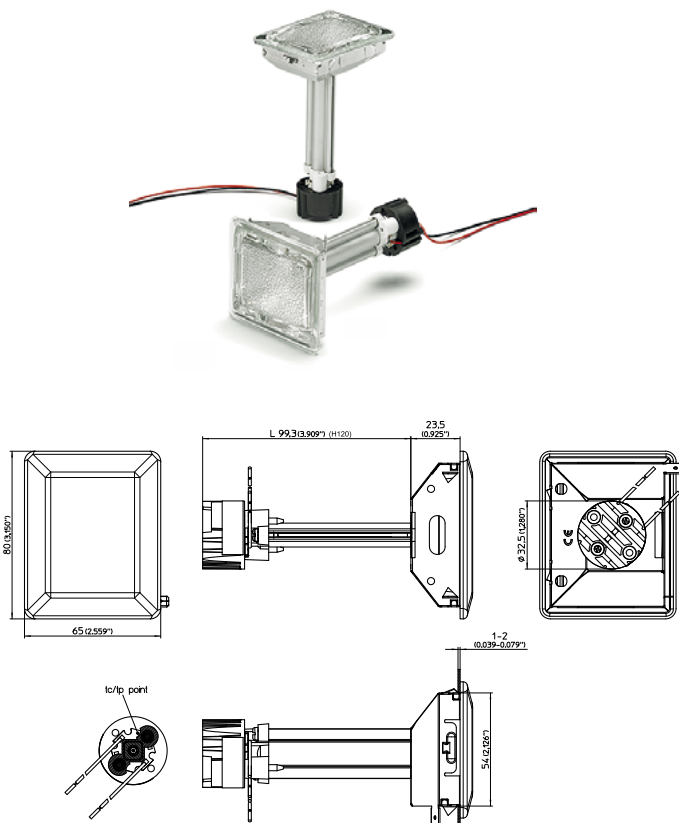


steam kit required

## 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  
 $t_c$ : 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)



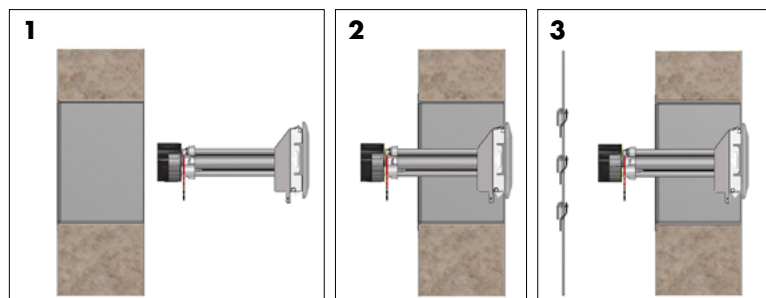
	Length L	
	mm	inch
H120	99.30	3.91

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

$t_c$ : 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)

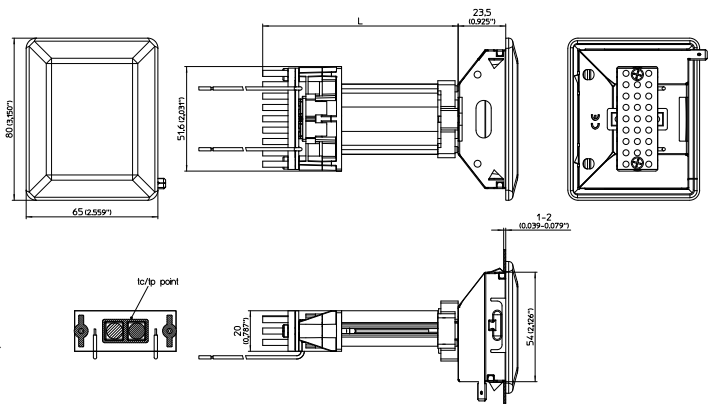
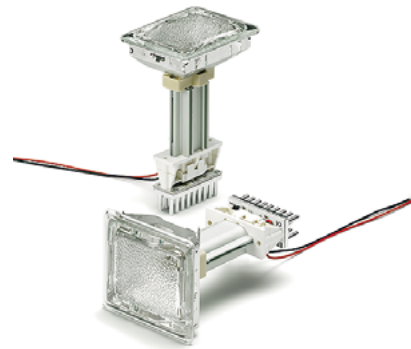
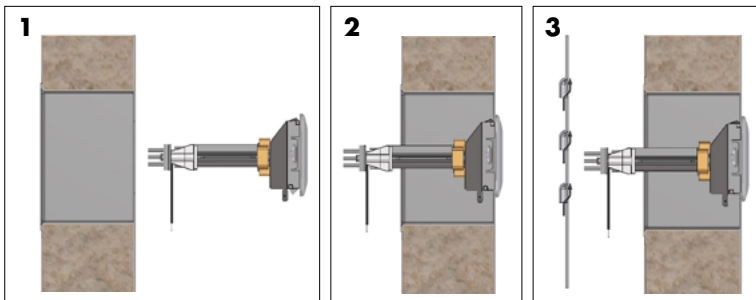


Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LO 015*	12 V	175	358	—	4.3
LO 021	700 mA	305	—	6.0	4.2

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 12 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.



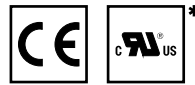
Type	Length L	
	mm	inch
H100	76.4	3
H120	96.4	3.795
H150	126.4	4.976
H250	226.4	8.91



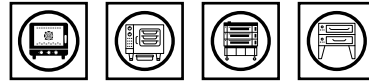
## LEDSpots

### For screw fixation

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



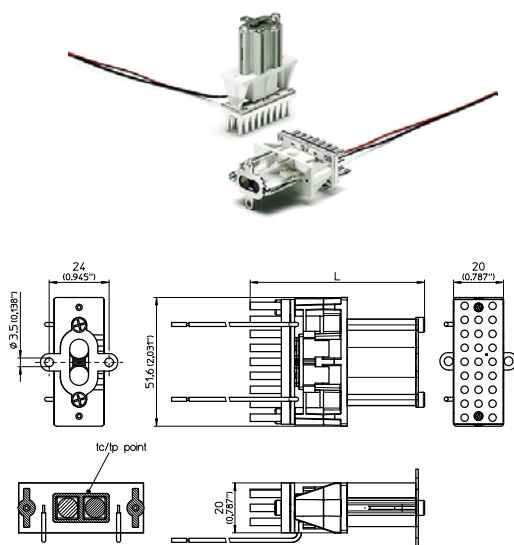
### Application fields



## Extreme HT

### For cavity lighting

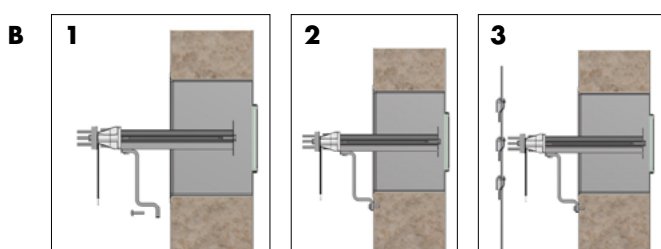
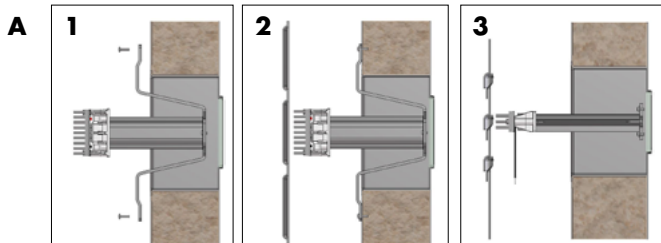
Beam angle:  $35^\circ$   
 Colour temperatures  
 LO 022: 3000 K or 4000 K  
 LO 023: 3000 K or 4500 K  
 $t_c$ :  $120^\circ\text{C} / 248^\circ\text{F}$   
 Lumen maintenance: L70/B50 5,000 hrs.  
 ( $t_p = 110^\circ\text{C} / 230^\circ\text{F}$ )  
 FEP  $0.50\text{ mm}^2 / \text{AWG}21$   
 Leads: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



Type	Length L	
	mm	inch
H67	67.4	2.65
H87	87.4	3.44
H97	97.4	3.83
H117	117.4	4.62

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 12 on how to change the LED engine.



### Mounting instructions

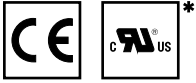
1. Fit the metal support\* into the LED spot's point of fixation with two screws.
2. Fasten the assembly at the oven cold wall with two screws.
3. Make sure that the LED spot's heat sink is skimmed by the air flow at proper temperature.

\* Based on your specific requests you may choose between solution A or B.  
 The bracket for the mounting is not included.

## Accessories for LED Solutions

### For replacement

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



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

tc: 120 °C / 248 °F

Lumen maintenance: please refer to Extreme R2 (p. 10) and Extreme HT (p. 11)

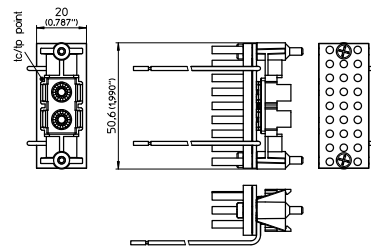
Leads: FEP 0.50 mm<sup>2</sup> / AWG21

Packaging unit: 70 pcs.

Type	Input supply	Power consumption (W)	Only compatible with
LO 017*	12 V	4.3	LO 015, LO 022
LO 018	700 mA	4.2	LO 021, LO 023

Tolerances of electrical data: ±10%

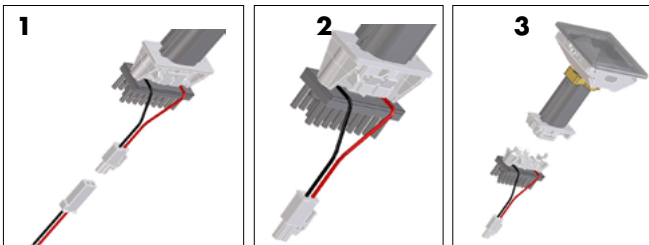
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



### Mounting instructions

In case of replacement, follow these steps to use Extreme R2 and HT again:

1. Disconnect the leads
2. Bend or break the little four wings and then pull the old engine
3. Push the new engine into position until it clicks. With that firmly in place, connect the leads.



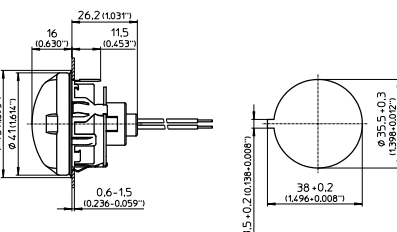
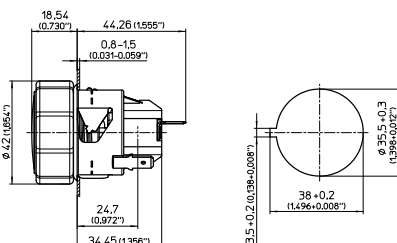
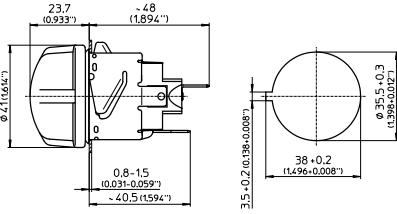
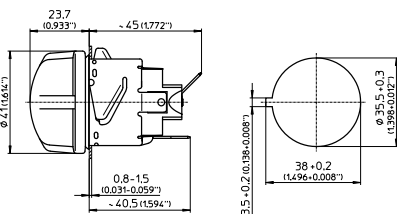
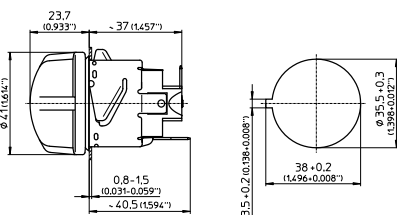
# PROFESSIONAL OVENS

## 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**



Temperature rating: T300 (572 °F)  
 Housing material: steatite  
 Lamp: 25 W/40 W  
 Lens: soda-lime glass  
 Connection: spade connectors  
 Packaging unit: 200 pcs.  
**Type: 34410**



## 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



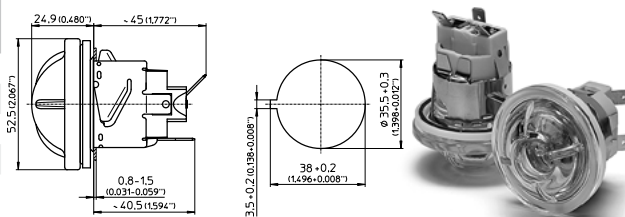
PROFESSIONAL OVENS

## 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



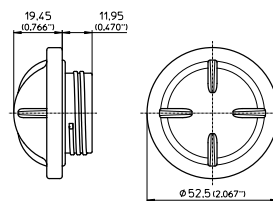
## Accessories

Pagoda glass

Material: borosilicate glass

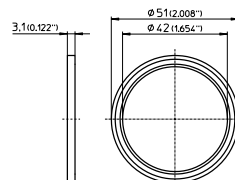
Fixing: screw

**Type: 94052**



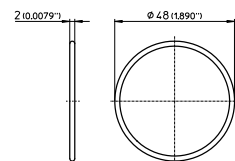
O-ring housing

Material: PTFE  
**Type: 98092**



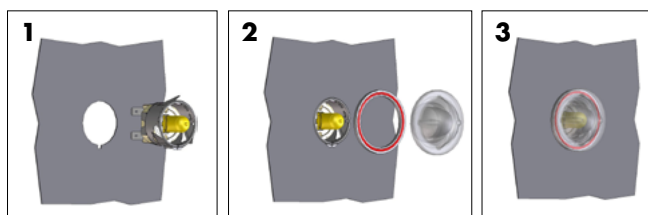
O-ring gasket

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: seatite  
 Lamp: 25 W/40 W  
 Lens: borosilicate glass  
 Connection: spade connectors  
 Packaging unit: 70 pcs.  
**Type: 33840**



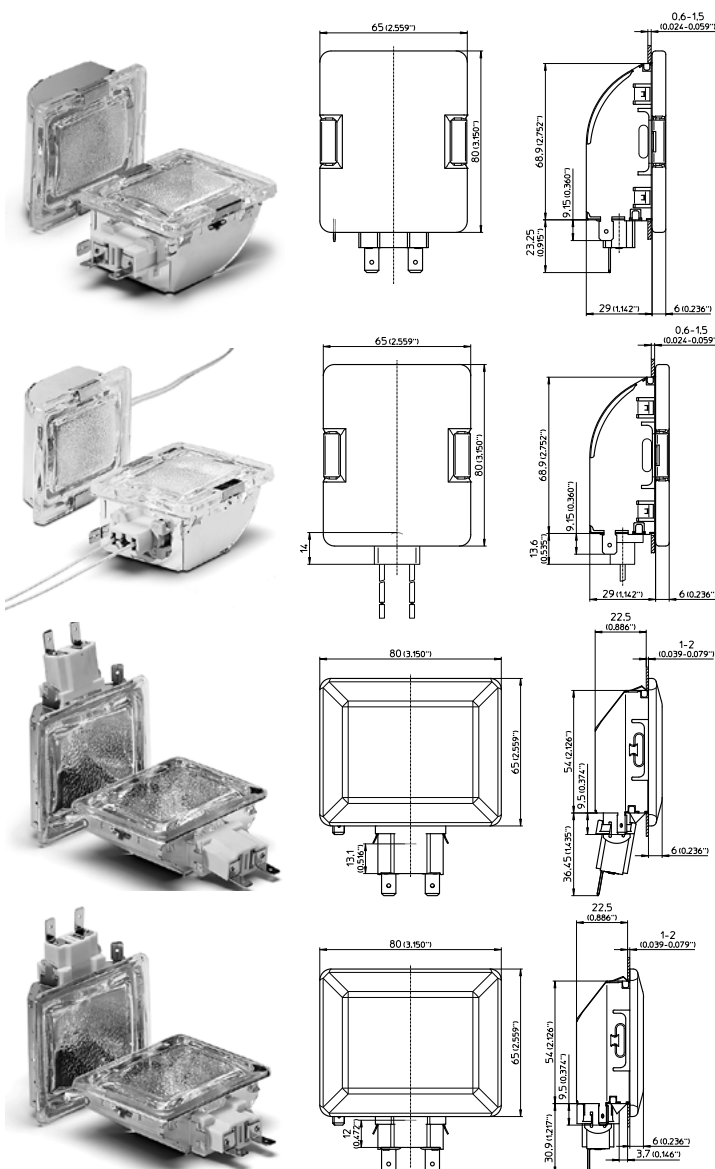
Temperature rating: T350 (662 °F)  
 Housing material: seatite  
 Lamp: 25 W/40 W  
 Lens: borosilicate glass  
 Leads: PTFE 0.75 mm<sup>2</sup> / cURus: FEP AWG20  
 Packaging unit: 70 pcs.  
**Type: 33940**



Temperature rating: T350 (662 °F)  
 Housing material: seatite  
 Lamp: 25 W/40 W  
 Lens: borosilicate glass  
 Connection: spade connectors  
 Packaging unit: 70 pcs.  
**Type: 33880**



Temperature rating: T350 (662 °F)  
 Housing material: seatite  
 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**

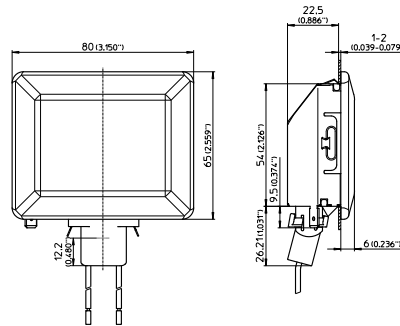
Nominal rating G9: 2/250  
 Nominal rating G4: 10/24  
 Contacts: earth spade connector 6.3x0.8  
 Reflector: aluminium plated steel  
 Fixing: click-in

### Application fields



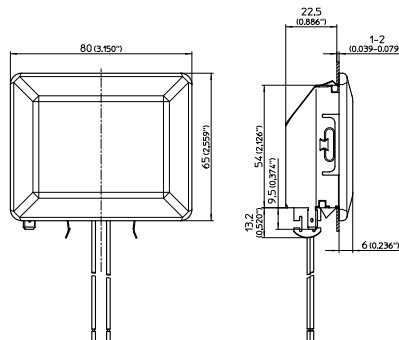
## G9 Lampholders

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

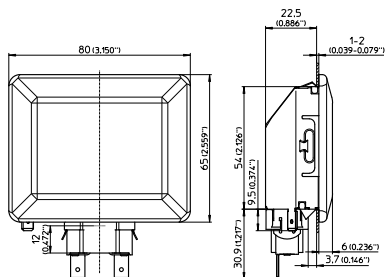
For cut-out 55x70 mm / 2.165x2.756 in

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



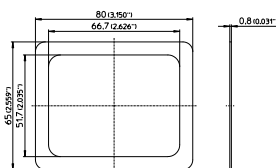
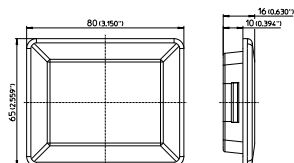
### Compatible Lampholders

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



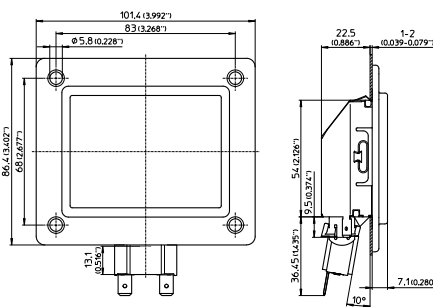
PROFESSIONAL OVENS

## 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

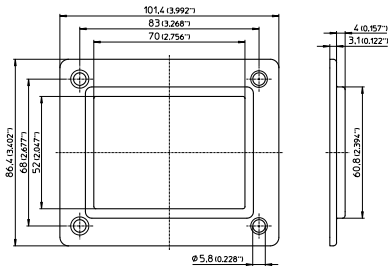
### Assembled example - Rectangular steam kit



## Accessories

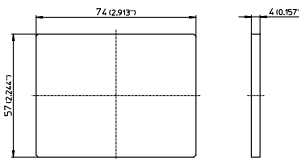
Metal frame

Material: inox  
**Type: 93195**



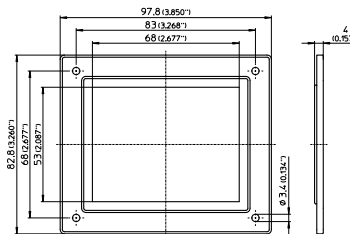
Flat glass

Material: tempered glass  
**Type: 94090**



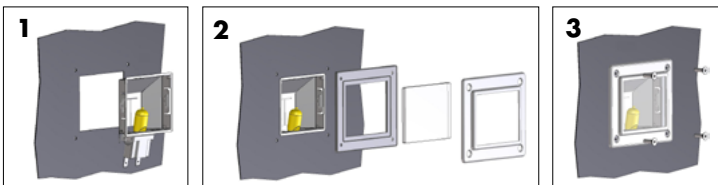
Silicone gasket

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

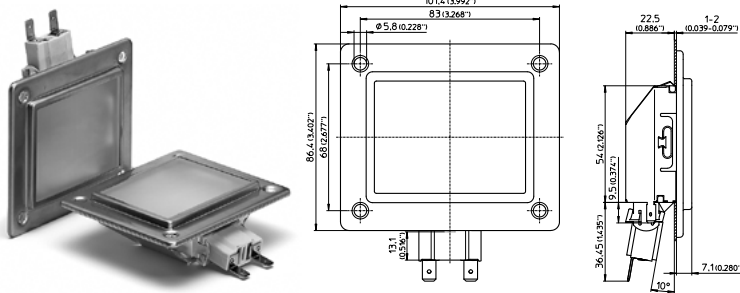
Nominal rating G9: 2/250  
 Nominal rating G4: 10/24  
 Contacts: earth spade connector 6.3x0.8  
 Fixing: click-in

### Application fields



PROFESSIONAL OVENS

### 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

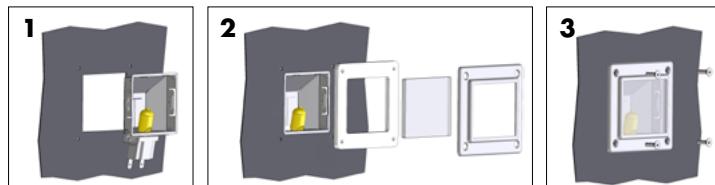
Metal frame  
 Material: inox  
**Type: 93195**

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

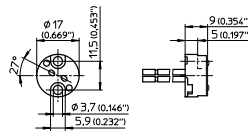
Casing: ceramic  
Cover plate: mica  
Nominal rating: 10/24  
Fixing: fixing holes for screws M3  
Leads: PTFE 0.75 mm<sup>2</sup> / AWG24,  
length: 140 mm / 5.512 in

### Application fields

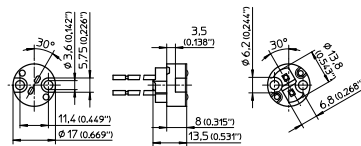


PROFESSIONAL OVENS

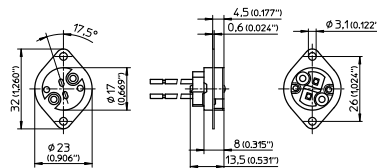
Temperature rating: T350 (662 °F)  
Contacts: Ni  
Packaging unit: 500 pcs.  
**Type: 32400**



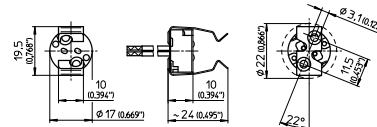
Temperature rating: T300 (572 °F)  
Multipoint contacts: CuNiZn  
Packaging unit: 1000 pcs.  
**Type: 32700**



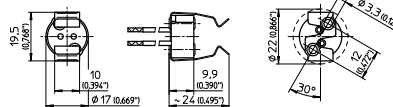
Temperature rating: T300 (572 °F)  
Multipoint contacts: CuNiZn  
Fixing plate: zinc-coated polished steel  
Packaging unit: 1000 pcs.  
**Type: 32720**



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







DISHWASHERS

# 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

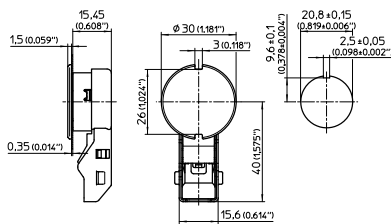
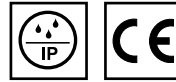


# DISHWASHERS

## LEDSpots for Dishwashers

For cut-out  $\varnothing$  20.8 mm / 0.819 in

Colour rendering:  $R_a > 80$   
 Fixing: bayonet



### DW

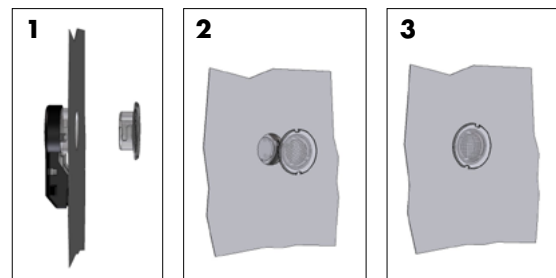
Lens material: PSU  
 Gasket: silicone  
 Colour temperatures: 6500 K  
 $t_c$  max.: 100 °C / 212 °F  
 Lumen maintenance: L70/B50 50,000 hrs.  
 ( $t_p = 85$  °C / 185 °F)  
 Electrical connection: RAST 2.5 – 3 ways  
 Packaging unit: 160 pcs.

Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LDW002	6 V	35	122	—	0.7

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.

### Mounting instructions

1. Put the back assembly in place behind of 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.





## REFRIGERATED CABINETS

# LED Solutions

## For Refrigerated Cabinets, Food Display Units & Deli Counters

### ■ OVERVIEW OF PICTOGRAMS

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

#### Application field



For vertical multi-deck cabinets



For ice cream and pastry cabinets



For wine cabinets

#### Assembly information



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



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



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

#### Safety information



IP20 protection

#### Approvals



CE conformity

#### Beam angle types



Narrow  
Beams up to 30°



Medium  
Beams up to 60°



Wide  
Beams up to 90°



Extra Wide  
Beams starting from 91°





## REFRIGERATED CABINETS

### LED Line

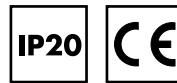
#### Fixing plate

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<sub>c</sub>:

75 °C / 167 °F

Lumen maintenance:

L70/B50 36,000 hrs.

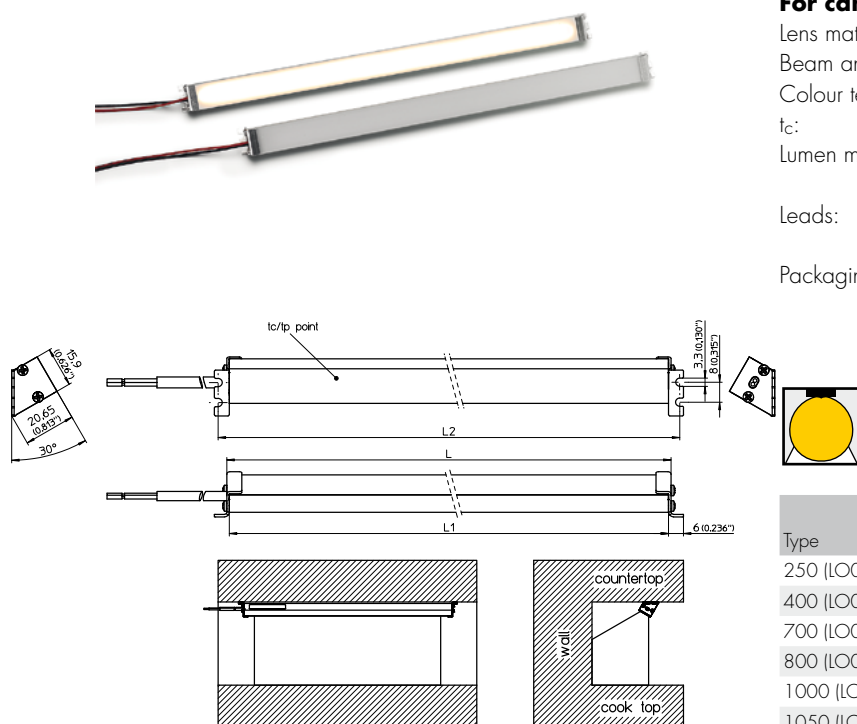
(t<sub>p</sub> = 45 °C / 113 °F)

Leads:

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

Packaging unit:

25 pcs 250 (LO005)  
30 pcs 400 (LO005)  
60 pcs 700 (LO005)  
30 pcs 800 (LO005)  
20 pcs 1000 (LO005)  
20 pcs 1050 (LO005)  
30 pcs 1300 (LO005)



Type	Length L		Length L1		Length L2	
	mm	inch	mm	inch	mm	inch
250 (LO005)	262	10.31	250	9.85	259	10.2
400 (LO005)	412	16.22	400	15.75	409	16.1
700 (LO005)	712	28.03	700	27.56	709	27.9
800 (LO005)	812	31.96	800	31.5	809	31.85
1000 (LO005)	1012	39.84	1000	39.37	1009	38.72
1050 (LO005)	1062	41.81	1050	41.33	1059	41.7
1300 (LO005)	1312	51.65	1300	51.18	1309	51.53

Type	Input supply	Typ. luminous flux (lm)	Power consumption (W)
250 (LO005)	12 V	236	4.5
400 (LO005)	12 V	372	7.1
700 (LO005)	12 V	660	12.6
800 (LO005)	12 V	745	14.2
1000 (LO005)	12 V	944	18
1050 (LO005)	12 V	987	18.9
1300 (LO005)	12 V	1227	23.4

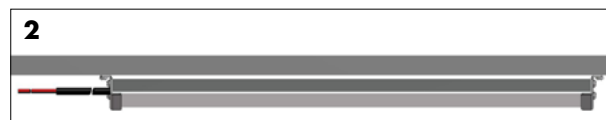
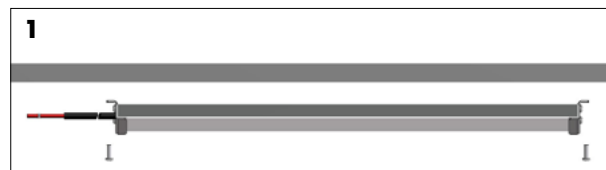
Tolerances of electrical and optical data: ±10%

Emission data at t<sub>p</sub> = 45 °C / 113 °F (4000 K)

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

#### Mounting instructions

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



## LEDSpots

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

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



### Application fields



## Revo

Lens material: PC  
Beam angle: 100°  
Colour temperatures: 3000 K or 4000 K  
 $t_c$ : 100 °C / 212 °F  
Lumen maintenance: L70/B50 50,000 hrs.  
( $t_p = 85$  °C / 185 °F)  
Leads on request: PVC 0.35 mm<sup>2</sup> / AWG22  
Packaging unit: 162 pcs.



## Revo P

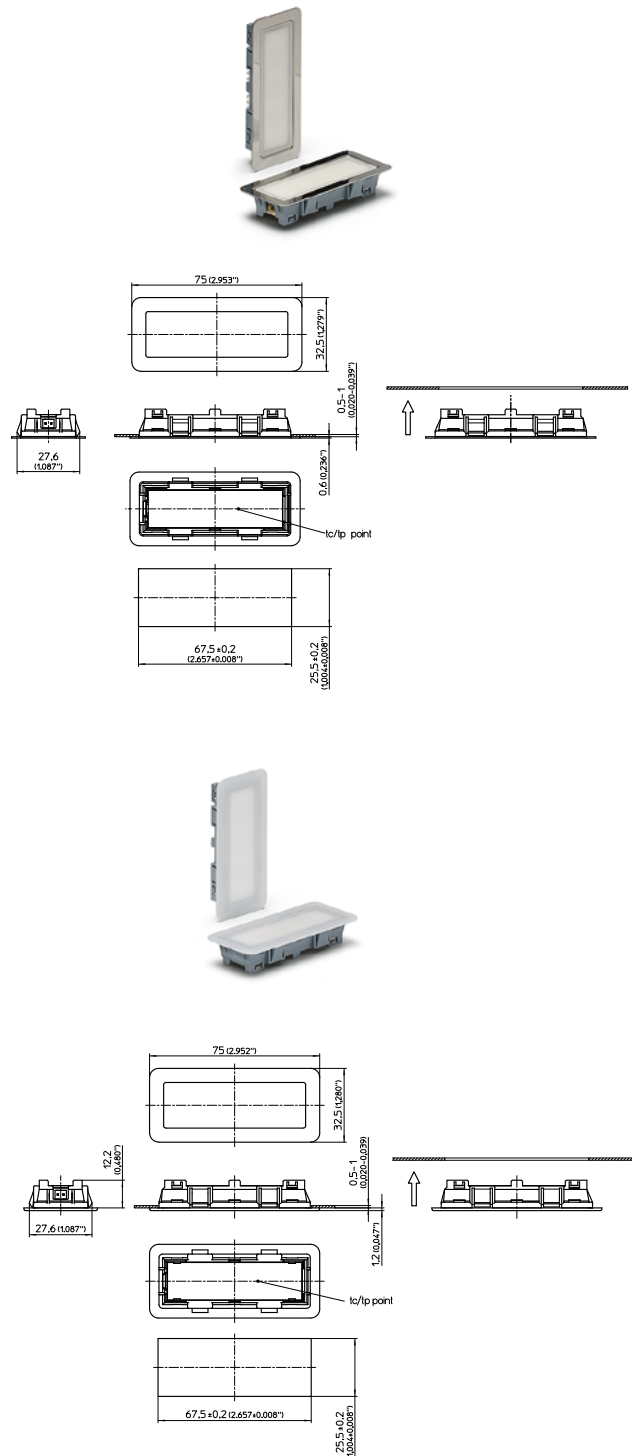
Lens material: PC  
Beam angle: 100°  
Colour temperatures: 3000 K or 4000 K  
 $t_c$  max.: 100 °C / 212 °F  
Lumen maintenance: L70/B50 50,000 hrs.  
( $t_p = 85$  °C / 185 °F)  
Leads on request: PVC 0.35 mm<sup>2</sup> / AWG22  
Packaging unit: 162 pcs.



Type	Input supply	Typ. luminous flux (lm)	Typ. current (mA)	Typ. voltage (V)	Power consumption (W)
LCH034	12 V	120	114	—	1.4
LCH058	350 mA	110	—	3.2	1.1
LCH040	700 mA	210	—	3.2	2.3

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



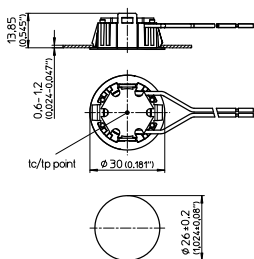
## REFRIGERATED CABINETS

### 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  
 $t_c$ : 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
LCH044	350 mA	125	—	2.8	1

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 pest controlling

## ■ OVERVIEW OF PICTOGRAMS

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

### Application field



For pest controlling

### Approvals



CE conformity



ENEC approved



UL approved

### 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

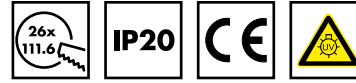
# PEST CONTROLLING

## LED Solution for pest controlling

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

Fixing: holes for screws M3

Wall thickness: 1.4–2 mm



### Application fields



## VIO365

Lens material: PMMA\*  
 Beam angle: 90°  
 Typ. peak wavelength: 365 nm  
 tc: 85 °C / 185 °F  
 Radiant flux maintenance: L70 / 33,000 hrs.\*\*  
 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	10.8	3.8

Tolerances of electrical and optical data: ±10%

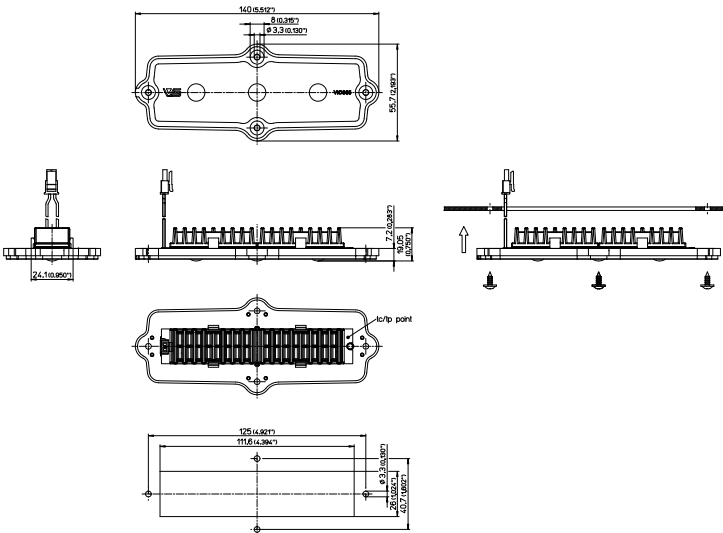
Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

\* It is advisable to replace the lens every 2,000 working hours (cf. pag. 29 for replacement instructions)

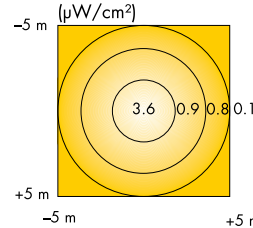
\*\* Refers to the only LED module

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

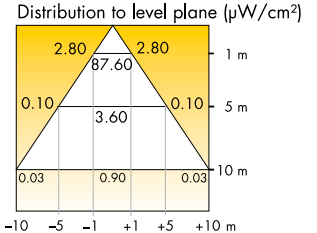
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



### Energy distribution

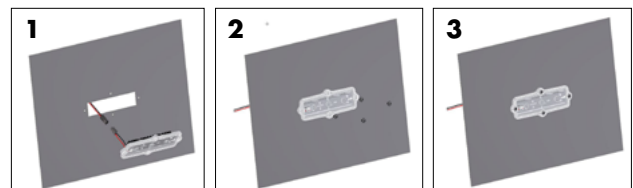


### Irradiation energy



### Mounting instructions

1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the pest controlling 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 pest controlling

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

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



### Application fields



PEST CONTROLLING

## VIO365 IP66

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



Type	Input supply	Typ. radiant flux (W)	Av. irradiance*** (W/m²)	Typ. voltage (V)	Power consumption (W)
LUV002	350 mA	1.52	0.55	10.8	3.8

Tolerances of electrical and optical data: ±10%  
Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

\* It is advisable to replace the lens every 2,000 working hours (cf. pag. 29 for replacement instructions)

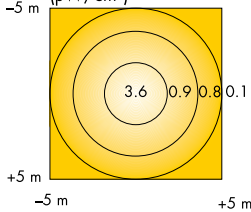
\*\* Refers to the only LED module

\*\*\* At 1 m distance on a 1x1 m² surface

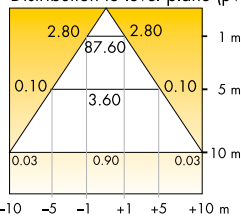
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



**Energy distribution**  
( $\mu\text{W}/\text{cm}^2$ )

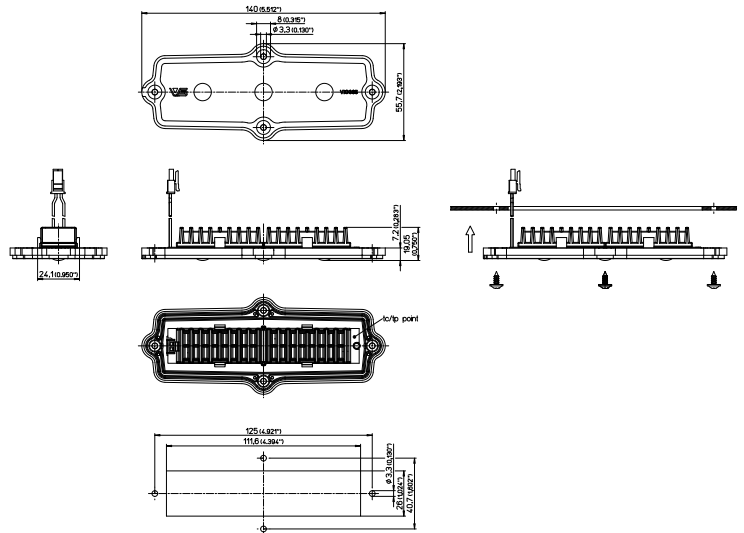
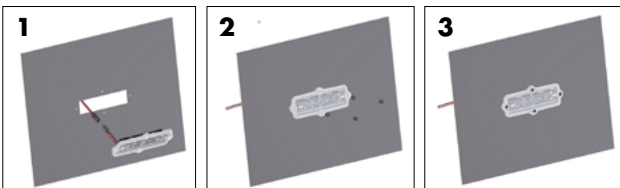


**Irradiation energy**  
Distribution to level plane ( $\mu\text{W}/\text{cm}^2$ )



### 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 pest controlling 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

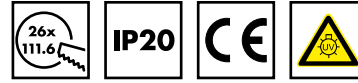
# PEST CONTROLLING

## LED Solution for pest controlling

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

Fixing: holes for screws M3

Wall thickness: 1.4–2 mm



### Application fields



## VIO365 S

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



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	10.8	3.8

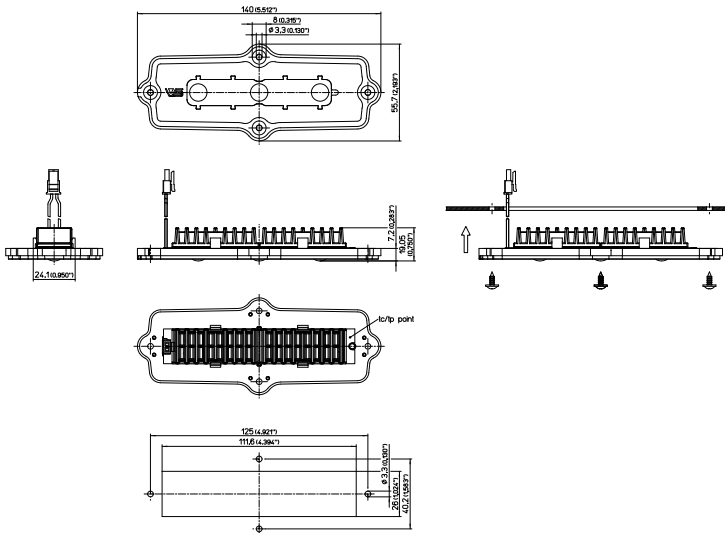
Tolerances of electrical and optical data: ±10%

Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

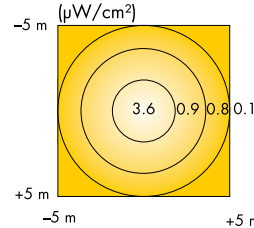
\* Refers to the only LED module

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

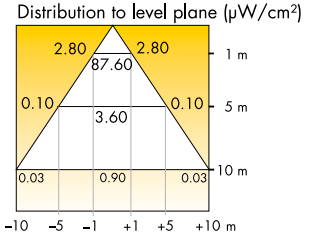
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



### Energy distribution

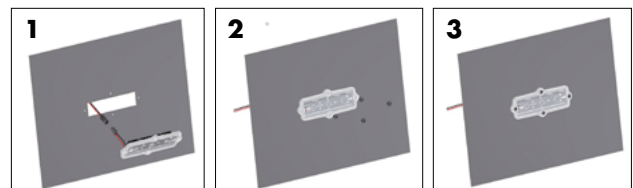


### Irradiation energy



### Mounting instructions

1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the pest controlling 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 pest controlling

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

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



### Application fields



PEST CONTROLLING

## VIO365 S IP67

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



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	10.8	3.8

Tolerances of electrical and optical data: ±10%

Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

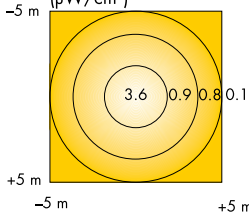
\* Refers to the only LED module

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

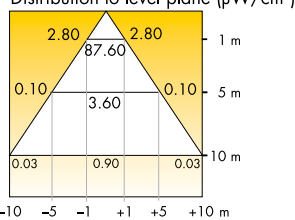
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



**Energy distribution**  
( $\mu\text{W}/\text{cm}^2$ )

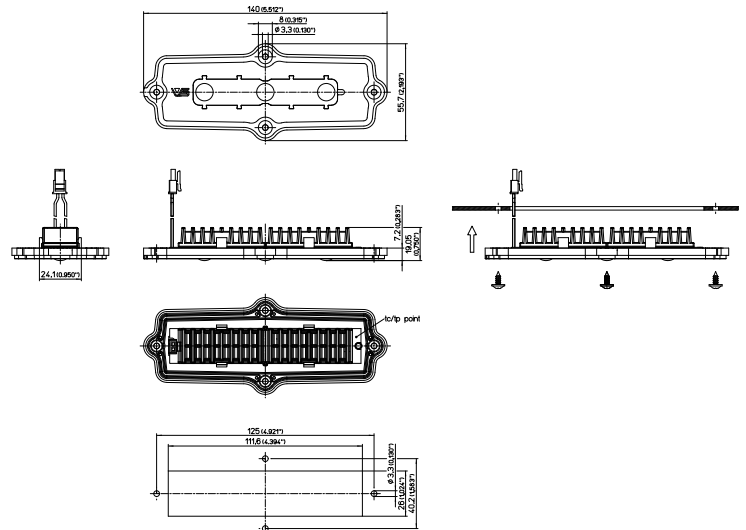
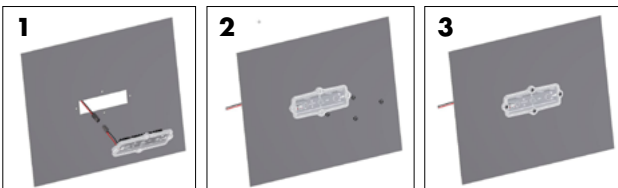


**Irradiation energy**  
Distribution to level plane ( $\mu\text{W}/\text{cm}^2$ )



### 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 pest controlling 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



## PEST CONTROLLING

### Accessories for LED Solution

#### For replacement

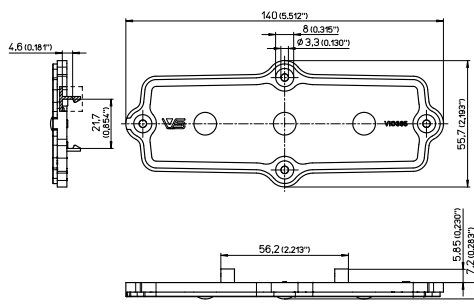
Fixing: click-in



### Lens VIO-LED

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

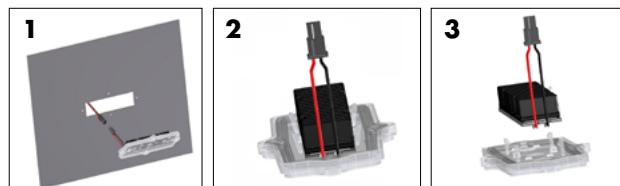
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



#### 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 pest controlling

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



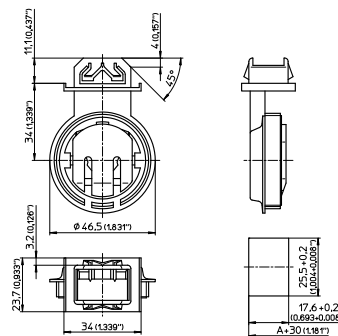
### Application fields



## G13 Lampholders

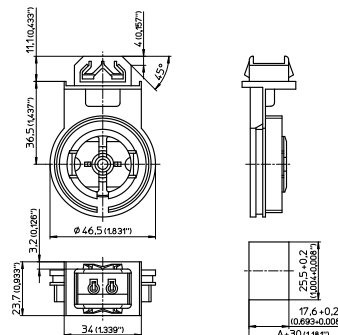
Temperature rating: T140 (284 °F)  
 Casing material: PC  
 Interior part material: PBT GF  
 Connection: push-in terminals  
 Packaging unit: 250 pcs.

**Type: 84175**



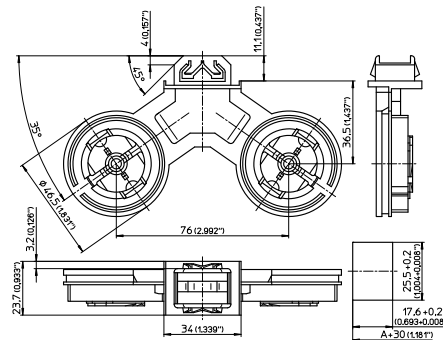
Temperature rating: T140 (284 °F)  
 Casing material: PC  
 Interior part material: PBT GF  
 Connection: push-in terminals  
 Packaging unit: 500 pcs.

**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**



# PEST CONTROLLING

## Accessories for G13 Lampholders



### Application fields



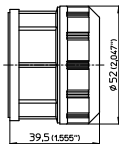
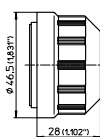
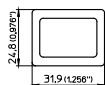
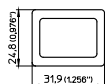
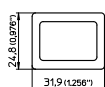
## Accessories

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 Solutions

## For Sterilization

### ■ OVERVIEW OF PICTOGRAMS

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

#### Application field



For sterilization

#### Approvals



CE conformity

#### Safety information



IP20 protection



IP 54 protection



IP67 protection



UV radiation hazard

#### Assembly information



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

# STERILIZATION

## LED Solution for Sterilization

### Application fields



## About ultraviolet rays

**UVC rays are the most efficient rays to disinfect surfaces in a short time**

Germicidal ultraviolet radiation is a tested and effective technology for killing microorganisms and ensures bacteriologically controlled surfaces. The spectral range of ultraviolet radiation

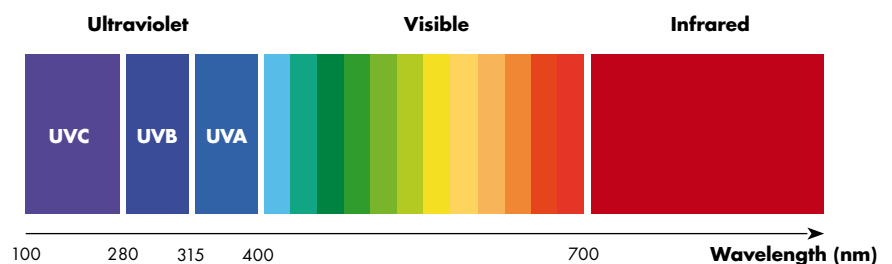
is between 100 and 400 nm and is invisible to the human eye. The wavelength of UVC rays is between 100 and 280 nm and are the most efficient rays to disinfect surfaces in a short time.

Scientific research has shown that ultraviolet rays are a valid disinfection system (physical and not chemical). All microorganisms that live in water or in the air-born (bacteria, viruses, fungi, algae, etc.) undergo an action by ultraviolet rays which stops their development process. UV rays act on the nucleus of the cell that, when properly irradiated, is subjected to a reaction that prevents the reproduction pro-

cess in a completely natural way (damaging their protein structure to alter their DNA/RNA).

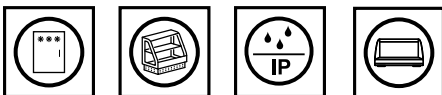
**Caution - Be aware of dangers when using UVC rays**

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



## Applications of UVC light

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



## Support from the beginning



Correct design stage



Simulation of the design stage



Data collection on the stage

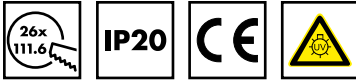


Microbiological test by accredited labs

## LED Solution for Sterilization

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

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



### Application fields



# STERILIZATION

## VIO275 S

Lens material: Silicone + PA6  
Beam angle: 90°  
Typ. peak wavelength: 275 nm  
tc: 75 °C / 167 °F  
Radiant flux maintenance: L70 / 11,000 hrs.\*  
Leads: FEP  
Packaging unit: 48 pcs.

Type	Input supply	Typ. radiant flux (mW)**	Av. irradiance*** (W/m²)	Typ. voltage (V)	Power consumption (W)
LUV004	350 mA	25	0.16	6	2.1

Tolerances of electrical and optical data: ±10%  
Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

\* Refers to the only LED module

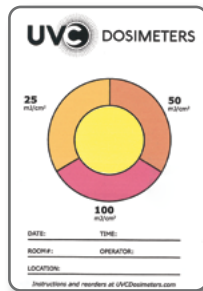
\*\* Refers to 1 Vio275 S. More radiant flux power are on request.

\*\*\* At 0.5 m distance on a 0.5x0.5 m² surface with 4 Vio275 S

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

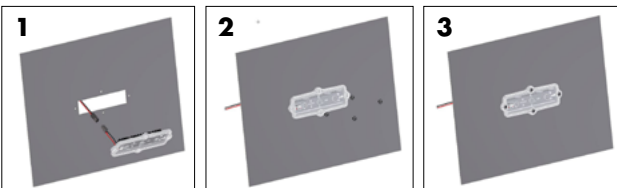
### Do you want to check the efficacy of your solution?

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



### Mounting instructions

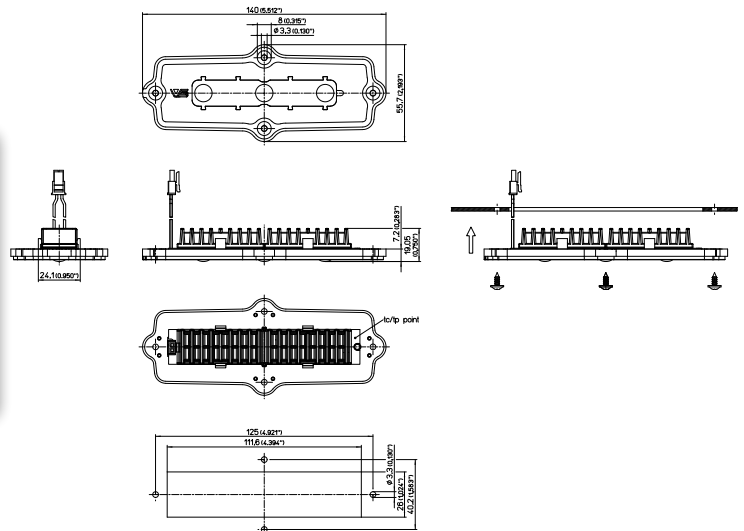
1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the pest controlling machine.
3. Make sure that the radiant flux of the luminaire is not blocked by any means.



Certified against SARS-COV-2  
99.99 % off in < 500 seconds



Tested by the University of Padua



### CAUTION

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

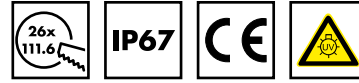
# STERILIZATION

## LED Solution for Sterilization

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

Fixing: holes for screws M3

Wall thickness: 1.4-2 mm



### Application fields



Certified against SARS-COV-2  
99.99 % off in < 500 seconds

Tested by the University of Padua



## VIO275 S IP67

Lens material: Silicone + PA6  
Beam angle: 90°  
Typ. peak wavelength: 275 nm  
tc: 75 °C / 167 °F  
Radiant flux maintenance: L70 / 11,000 hrs.\*  
Leads: FEP  
Packaging unit: 48 pcs.

Type	Input supply	Typ. radiant flux (mW)**	Av. irradiance*** (W/m²)	Typ. voltage (V)	Power consumption (W)
LUV004	350 mA	25	0.16	6	2.1

Tolerances of electrical and optical data: ±10%

Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

\* Refers to the only LED module

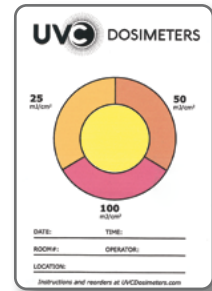
\*\* Refers to 1 Vio275 S. More radiant flux power are on request.

\*\*\* At 0.5 m distance on a 0.5x0.5 m² surface with 4 Vio275 S

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

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

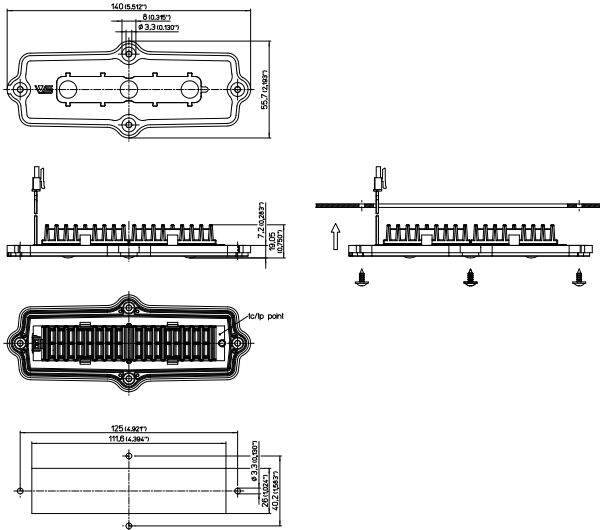
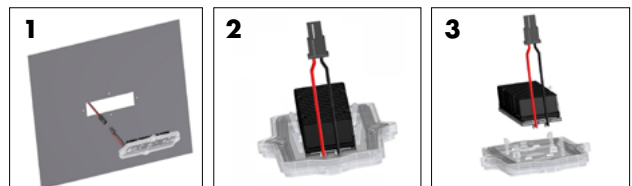
A different microorganisms need different UV dose to be deactivated. Also the exposure time is important. You can check the efficacy of your solution with our Dosimeters.



### Mounting instructions

In case of replacement please follow these steps:

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



### CAUTION

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

## LED Solution for Sterilization

### For cut-out Ø 56mm

Fixing: steel spring  
Wall thickness: 0.5–1.0 mm



### Application fields



STERILIZATION

## IPLine UV IP54

PCB: Aluminium  
Casing: thermally conductive plastic  
Diffuser: Quartz Glass  
Typ. peak wavelength: 275 nm  
Angle: 120° typical  
Lifetime: L70/11.000 hrs.\*  
tc: 75 °C / 167 °F  
Leads: PVC 0.35 mm<sup>2</sup> / AWG22  
Leads length: 250 mm  
Packaging unit: 45 pcs.

Type	Version	Input supply	Typ. radiant flux (mW)	Power consumption (W)	Typ. voltage (V)
LUV006	IPLine IP54	350 mA	30	2.1	6

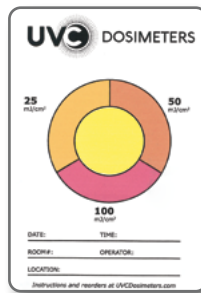
Tolerances of electrical and optical data: ±10%  
Emission data at  $t_p = 65\text{ °C} / 149\text{ °F}$

\* Refers to the only LED module

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

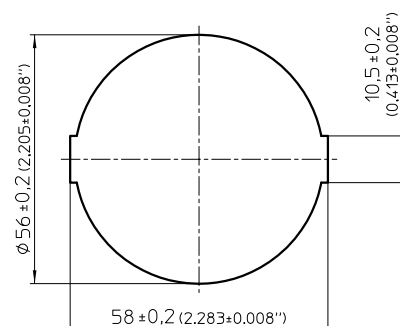
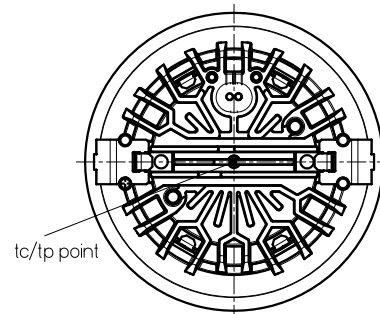
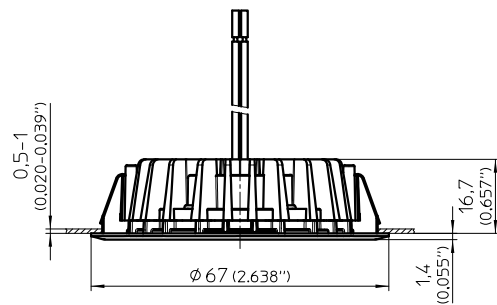
### Do you want to check the efficacy of your solution?

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



### CAUTION

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









# LED Constant-voltage and LED 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

	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

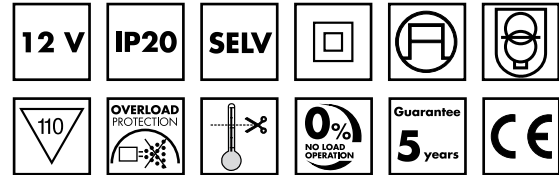


UKCA approved

# 12 V CV DRIVERS

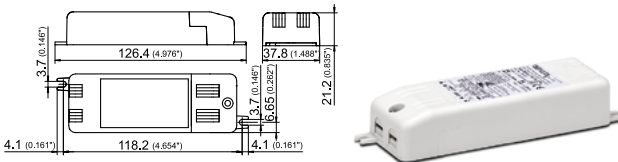
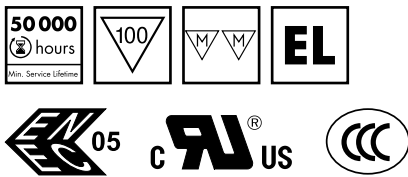
## LED Drivers CV 12 V

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

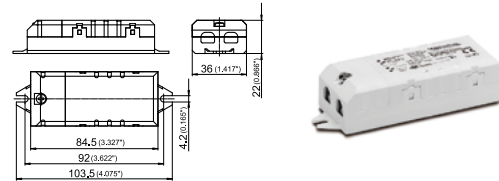


Max. output W	Type	Ref. No.	Mains voltage 50–60 Hz V ± 10%	Output voltage V ± 5%	Output current A	Power factor at full load (230 V)	Efficiency at full load % (230 V)	Max. service life at $t_p$ 65 °C/149 °F	$t_c$ max. °C/°F	Ambient temperature $t_a$ (°C/°F)	Connection Screw terminals
10	EDXe 110/12.074	<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

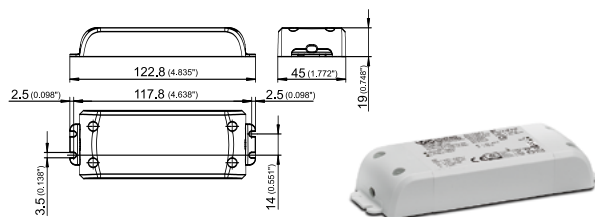
### 186981



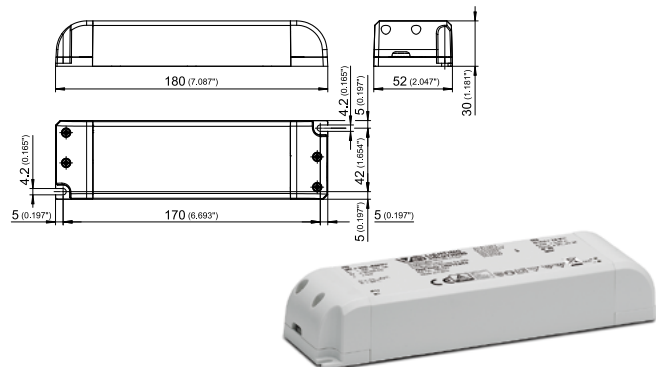
### 186204



### 186620



### 186621



## LED Drivers CV 24 V

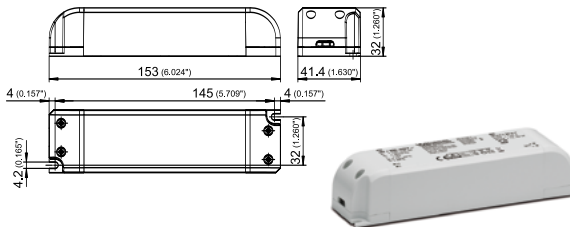
Output: max. 30, 60, 75 or 120 W  
 Mains voltage: 220–240 V, 50–60 Hz  
 Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation



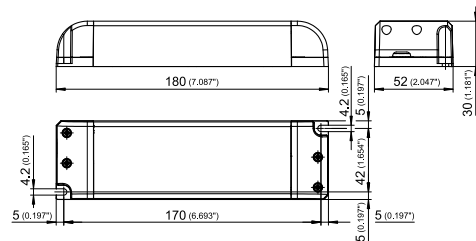
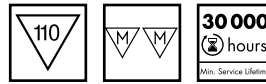
## 24 V CV DRIVERS

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

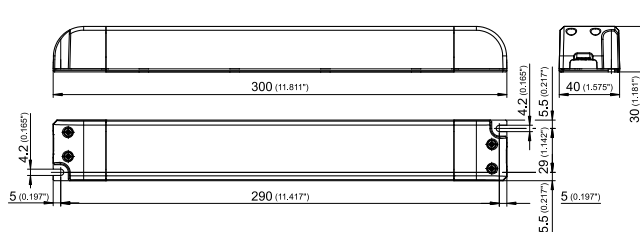
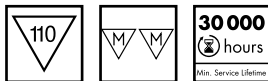
### 186624



### 186625, 186626



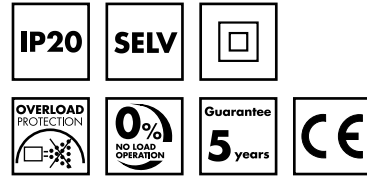
### 186627



# CC DRIVERS

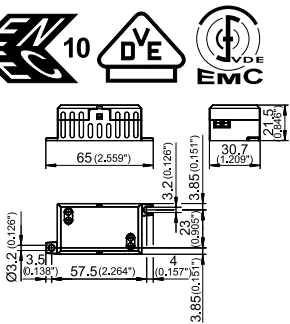
## LED CC Drivers

Output: min. 8.75 W – max. 32 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

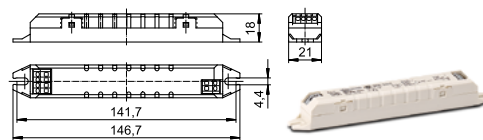
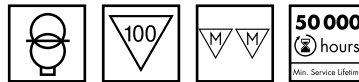


Max. output W	Type	Ref. No.	Mains voltage V (±10%)	Output current mA	Voltage output DC (V)	Power factor at full load [230 V]	Efficiency at full load % [230 V]	Max. service life at max. t <sub>p</sub> point temp. hrs.	t <sub>c</sub> max. °C/°F	Ambient temperature t <sub>a</sub> (°C/°F)	Connection terminals/ 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	-25 to +50 / -13 to +122 screw 2.5 mm <sup>2</sup> / AWG13
13	ECXe 350.586	<b>187260</b>	120–277	350 ±5%	2–38	> 0.9	> 84	80.000	75/167	80/176	-15 to +50 / +5 to +122 push-in 0.5–1.5 mm <sup>2</sup> / AWG24/AWG15
15	ECXe 350.031	<b>186229</b>	176–264 220–240	350 ±5%	2–40	> 0.55	> 81	100.000	70/158	80/176	-25 to +50 / -13 to +122 push-in 0.2–1.5 mm <sup>2</sup> / AWG24/AWG15
<b>700 mA</b>											
9	ECXe 700.315	<b>186916</b>	100–240	700 ±7.5%	5–13	> 0.94	> 78	50.000	75/167	85/185	-15 to +45 / +5 to +113 push-in 0.5–1.5 mm <sup>2</sup> / AWG24/AWG15
<b>1050 mA</b>											
32	ECXe 1050.585	<b>187259</b>	220–240	350/500/ 700/1050 ±7.5%	2–32	> 0.9	> 86	50.000	70/158	80/176	-15 to +45 / +5 to +113 push-in 0.5–1.5 mm <sup>2</sup> / AWG24/AWG15

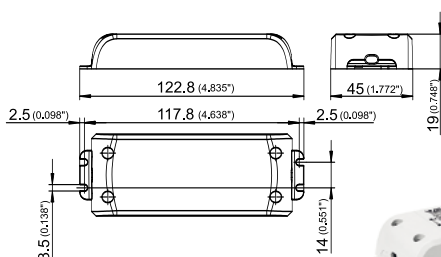
### 186519



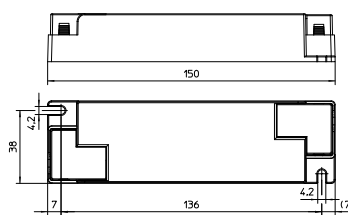
### 186229



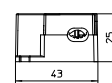
### 186916



### 187259

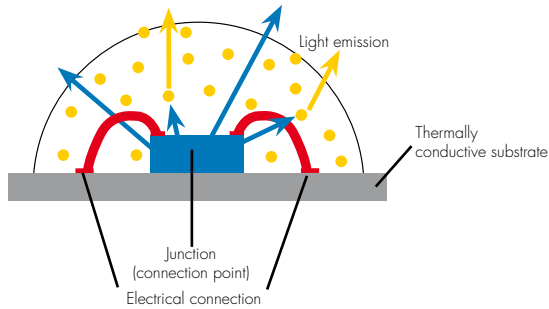


### 187260



## 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").



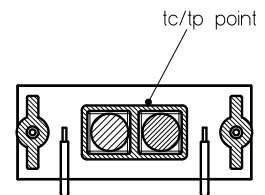
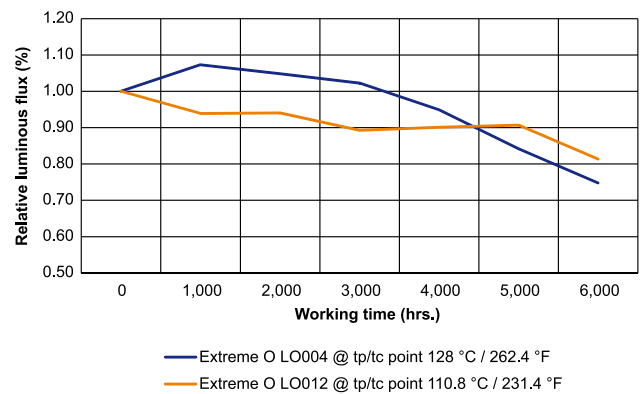
The decrease in luminous flux over the service life determines the quality of an LED solution. Based on the tests carried out in Vossloh-Schwabe's laboratory, the LED solutions' service life, even in extreme conditions such as professional ovens, exceeds 5,000 hrs.

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.

### 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.

## TECHNICAL DETAILS



### 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 to 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.

## TECHNICAL DETAILS

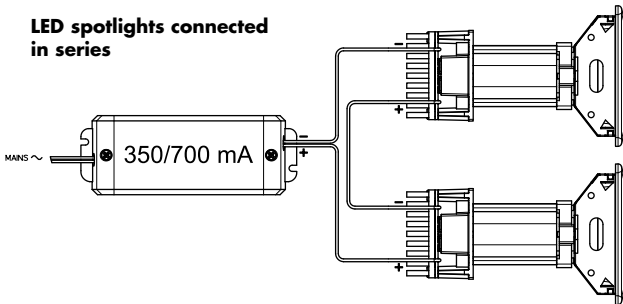
### Conductors for installations

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.

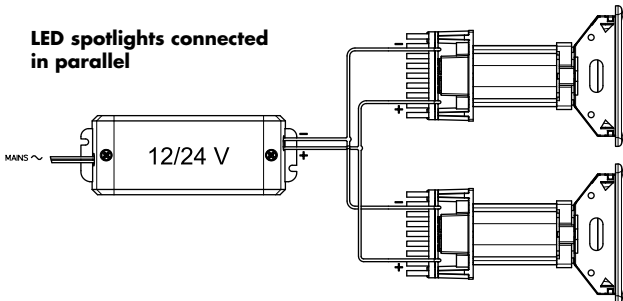
Insulation	Conductor Material	Cross-section		Mains voltage V	Max. temperature °C / °F
		mm <sup>2</sup>	inch <sup>2</sup>		
PVC	Cu/Cu tin-plated	0.35	0.0542	300	105 / 221
SI	Cu tin-plated	0.75	0.1162	300	180 / 356
FEP	Cu tin-plated	0.75	0.1162	300	180 / 356
PTFE	Cu nickel-plated	0.75	0.1162	500	250 /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

**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 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).

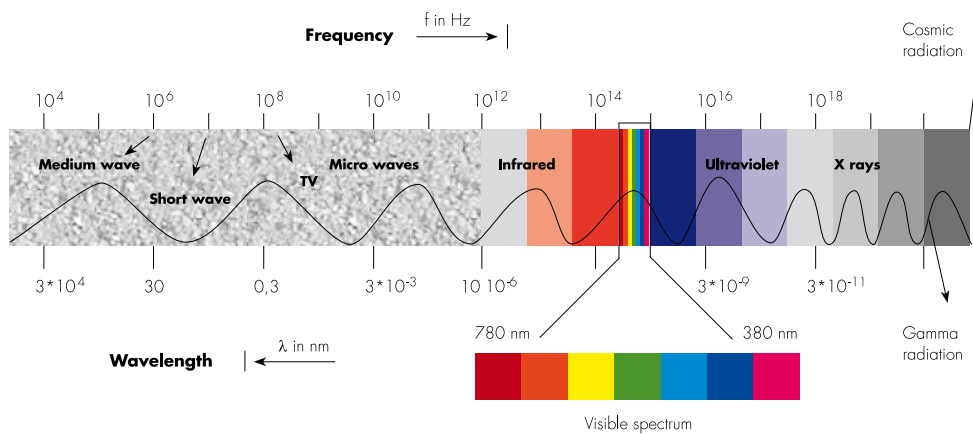
## UV light

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

## TECHNICAL DETAILS



### Could UV light be harmless under certain conditions of use?

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

### What is UV light used for?

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

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

### Does UV light cause any degradation on thermoplastic polymers?

Thermoplastic polymers such as ABS, PC, PP, PE and PMMA suffer a progressive color and mechanical degradation when exposed to UV light. The degradation depends not just on the irradiance applied on the polymer surface but also on the wavelength. The shorter the wavelength, the faster the degradation appears.









Whenever an electric light goes on around the world, Vossloh-Schwabe is likely to have made a key contribution to ensuring that everything works at the flick of a switch.

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

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



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