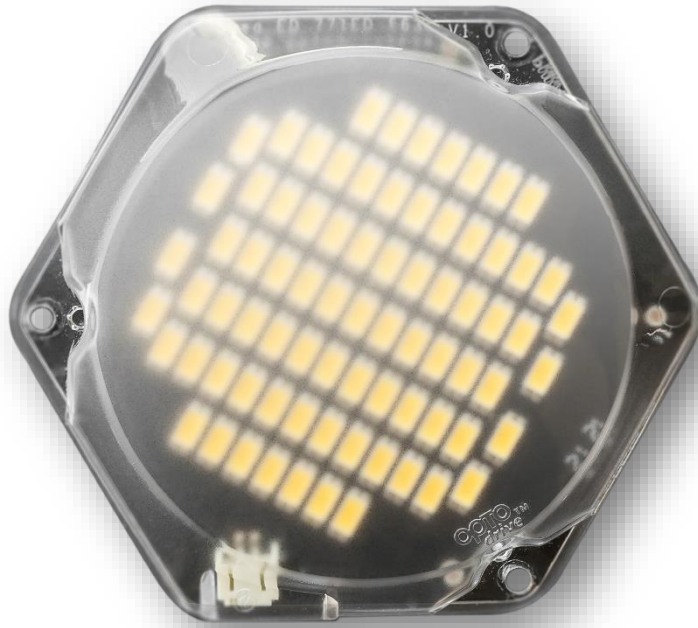




# SVEA ED



## SVEA ED

77-LED



## SVEA ED 77-LED

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n/a

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Author:  
SL

Date:  
2016-07-13

The LED Engine is designed to meet the demands from high volume producers and is easily connected to an external driver. Integrated high output optics are suited to support the light outputs for particular applications such as Downlights, Spotlights, Tasklights, Examination Lights etc.



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## Introduction

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### Applications

The LED module and light engine is named Svea and it is a design for light fittings and luminaires aiming for various areas. It has been designed in order to meet the demands on high performance optical solutions in both light emitting and in colour rendering. Mechanically it is constructed with our package design Svea (~85 mm) that has the same footprint as the others in the family both for external drivers as well as built-in drivers for 110/230VAC.

### Svea package

The same package is used for Downlight, Spotlight, Tasklight and Medical light fittings etc. The solution is developed to make it easy for the designers and engineers to choose from low to high power, from AC to DC and choose between a variety of lenses in the same luminaire or in similar design. In the design concept there are standard dimmers with the same snap-in connector (that fits the whole Optodrive™ concept) as well as several heat sink designs with worldwide distribution.

### ED design

ED stands for “External driver”. It has a standard plug-in connector that fits all the different ED designs.

### Light output

The colour stability is of high importance in order to ensure that the installations have a uniform light output. Parameters such as binning, lifetime and thermal control are vital for good results.

### Technical attributes

- Energy saving and a high lumen output
- High Colour Rendering
- Uniform Colour temperature
- Controlled lifetime
- Simple integration



Please note that the article number structure for the variations of the modules comes separately.



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## Short form Characteristics

### MECHANICAL

BOARD DIMENSIONS	83 mm diameter
ASSEMBLY HOLES	3 x 3.42 mm
WIRE CONNECTOR	PHR-2 or similar
HEIGHT	16.4

### ELECTRICAL

NUMBER OF LED'S	77
POWER SUPPLY	External driver
POWER	25W +/-10% ea.
LED CURRENT	700 mA +/-10% ea.

### ENVIRONMENTAL OPERATING CONDITIONS

TEMPERATURE RANGE	-40°C to 65°C (Absolute maximum temp Tc 65°C)
RELATIVE HUMIDITY	10-75%
AMBIENT AIR PRESSURE	500-1060 HPa



## Article number structure

Article number: Svea ED.30.700.n.9yy-N

- Clara:**      **Module name**  
ED:          External Driver  
P:          Power (Watt) maximum 30W.  
mA:        mA that the module are binned at.  
  
n:          Amount of LEDs  
9:          CRI >90 is 9 and CRI >80 is 8  
yy:        CCT 27 =2700K, 30 = 3000K, 40 = 4000K  
  
N:         Viewing angle code 130 for 130°

### Module order information:

ARTICLE NUMBER	ARTICLE NAME	CCT	CRI	LENS
103051	Svea ED.30.700.77.827-130	2700K	80+	Cover
103279	Svea ED.30.700.77.830-130	3000K	80+	Cover
-	Svea ED.30.700.77.840-130	4000K	80+	Cover
103542	Svea ED.30.700.77.860-130	6000K	80+	Cover
-	Svea ED.30.700.77.927-130	2700K	90+	Cover
-	Svea ED.30.700.77.930-130	3000K	90+	Cover
-	Svea ED.30.700.77.940-130	4000K	90+	Cover

### Wire order information:

ARTICLE NUMBER	ARTICLE NAME	LENGTH
103481	Wire ED L 200	200mm
103323	Wire ED L 325	325mm



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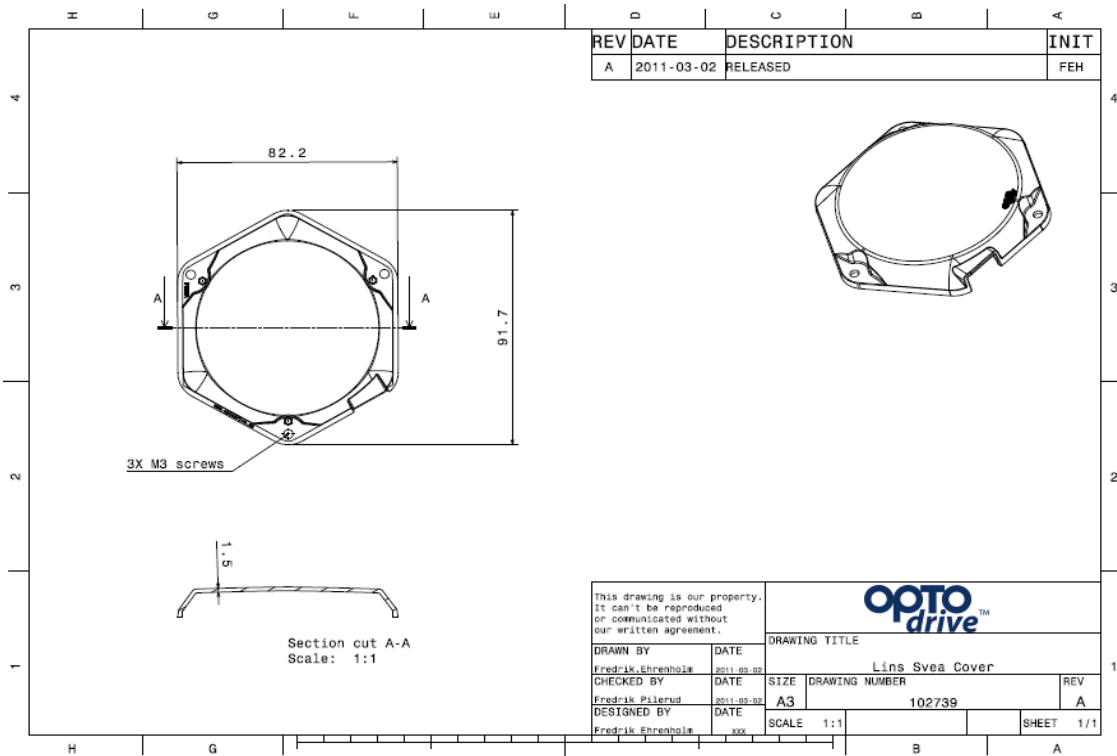
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## Dimensions LED module





## Parameters of the Lens system

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The lens system is mounted and fixated onto the PCB with a double press-fit. The light parameters are according to the following:

VERSION	VIEWING ANGLE	FWHM ANGLE
SVEA SPOT	17°	±8.5°
SVEA TOD	85°	±42.5°

Lens material optical grade PMMA.

- Allows use of high current and temperature conditions
- Best available optical efficiency with up to 90%
- Very even colour distribution over the whole beam angle
- Integrated holder. Fastening to heat sink with three screws
- Compact dimensions





## Parameters of the light output

Parameter Svea ED.30.700.77.8xx-NN	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	25W@700mA	2000	2300		lm
	12W@350mA		1400		lm
Correlated Colour Temperature	27 <sup>*(2)</sup>	CCT	2700		K
	30 <sup>*(2)</sup>	CCT	3000		K
	40 <sup>*(2)</sup>	CCT	4000		K
CRI	R <sub>a</sub>	80	84	-	Ra

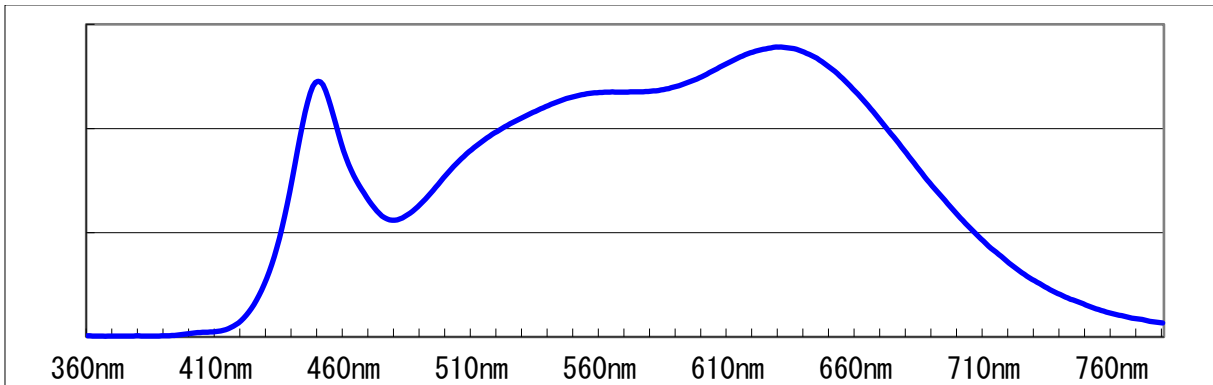
Parameter Svea ED.30.700.77.9xx-NN	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	25W@700mA	2000	2100		lm
	12W@350mA		1250		lm
Correlated Colour Temperature	27 <sup>*(2)</sup>	CCT	2700		K
	30 <sup>*(2)</sup>	CCT	3000		K
	40 <sup>*(2)</sup>	CCT	4000		K
CRI	R <sub>a</sub>	90	93	-	Ra

- (1)See detailed information in chapter "Parameter of lens system" Replace NN with viewing angle accordingly
- (2)See detailed information in chapter "Luminous Flux Bin" Mark the minimum intensity code
- (3)See detailed information in chapter "Binning structure graphical representation" Mark the colour shortform letter.
- (4)Electro-Optical characteristics LED at I<sub>F</sub>=350mA, T<sub>A</sub>=25°C

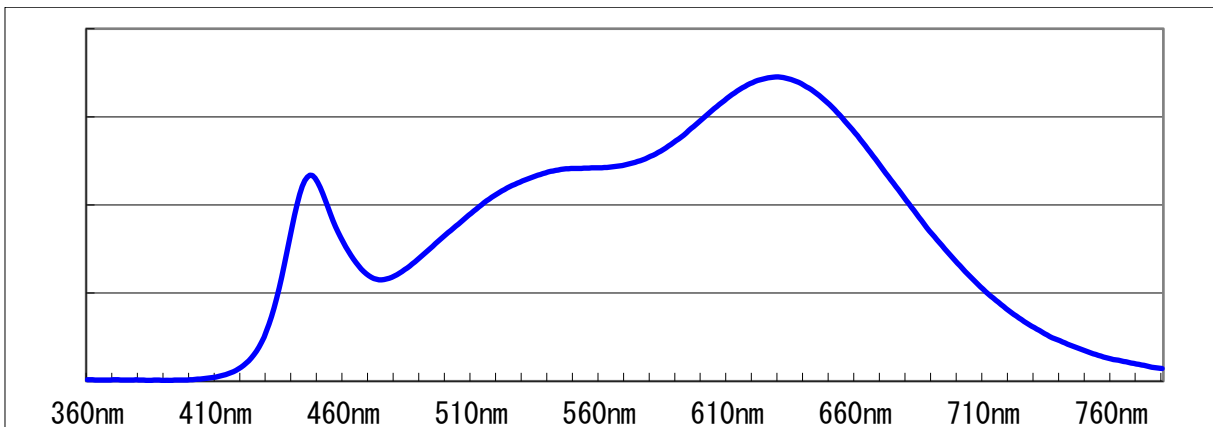


## Colour Spectrum CRI90

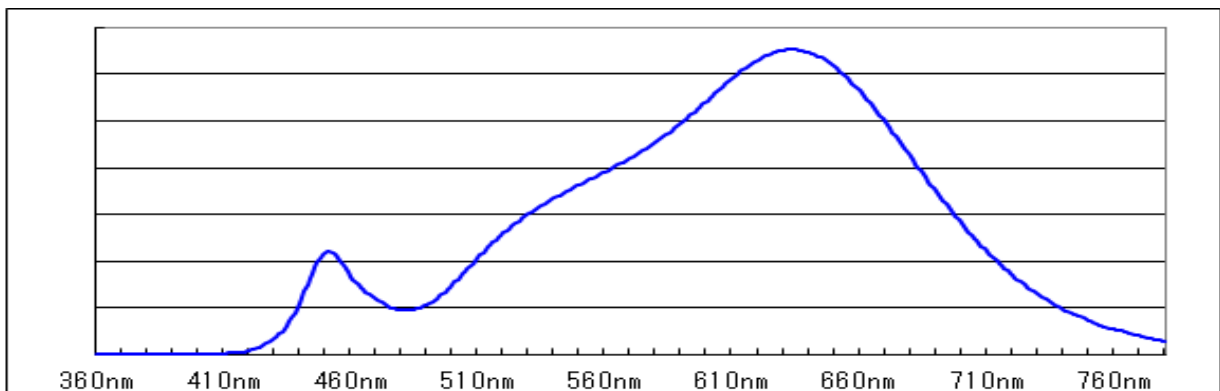
4000Kelvin



3000Kelvin

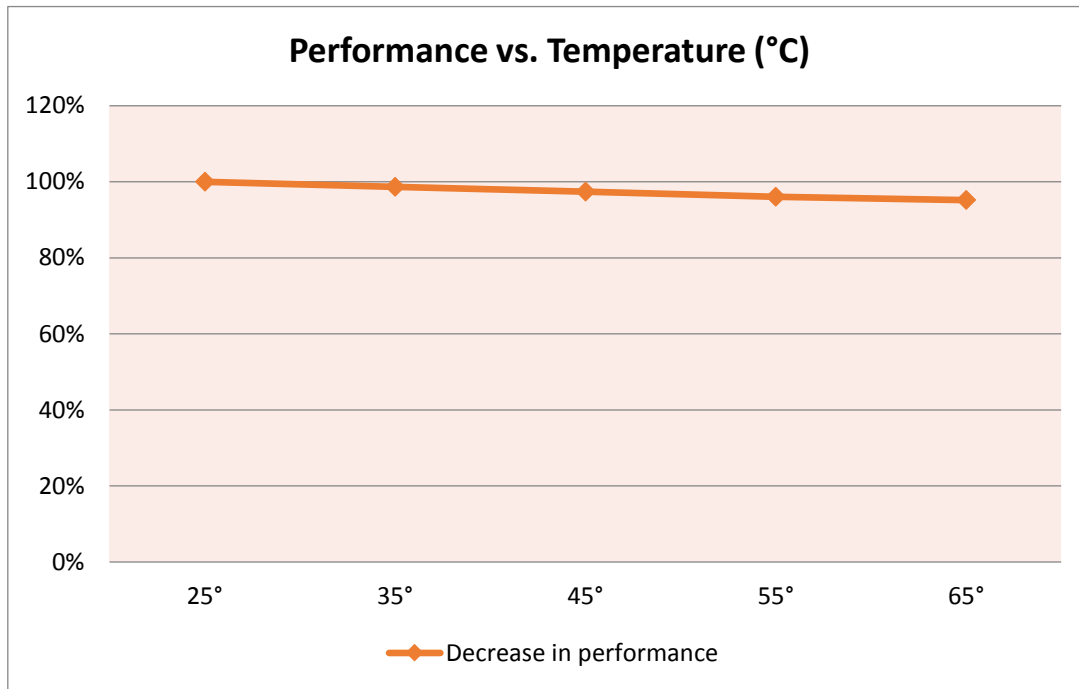


2700Kelvin



## Electro Optical data

### Temperature Characteristics



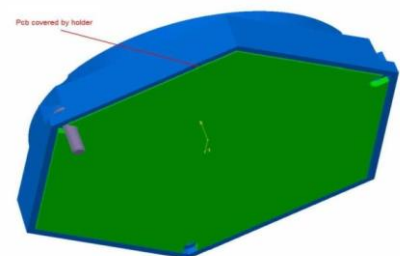
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.

### Thermal information

The thermal area (green) should be properly connected to an even and fine surface of a heat sink. Without this arrangement the unit will be overheated and will not be able to survive.

### Maximum Temperature

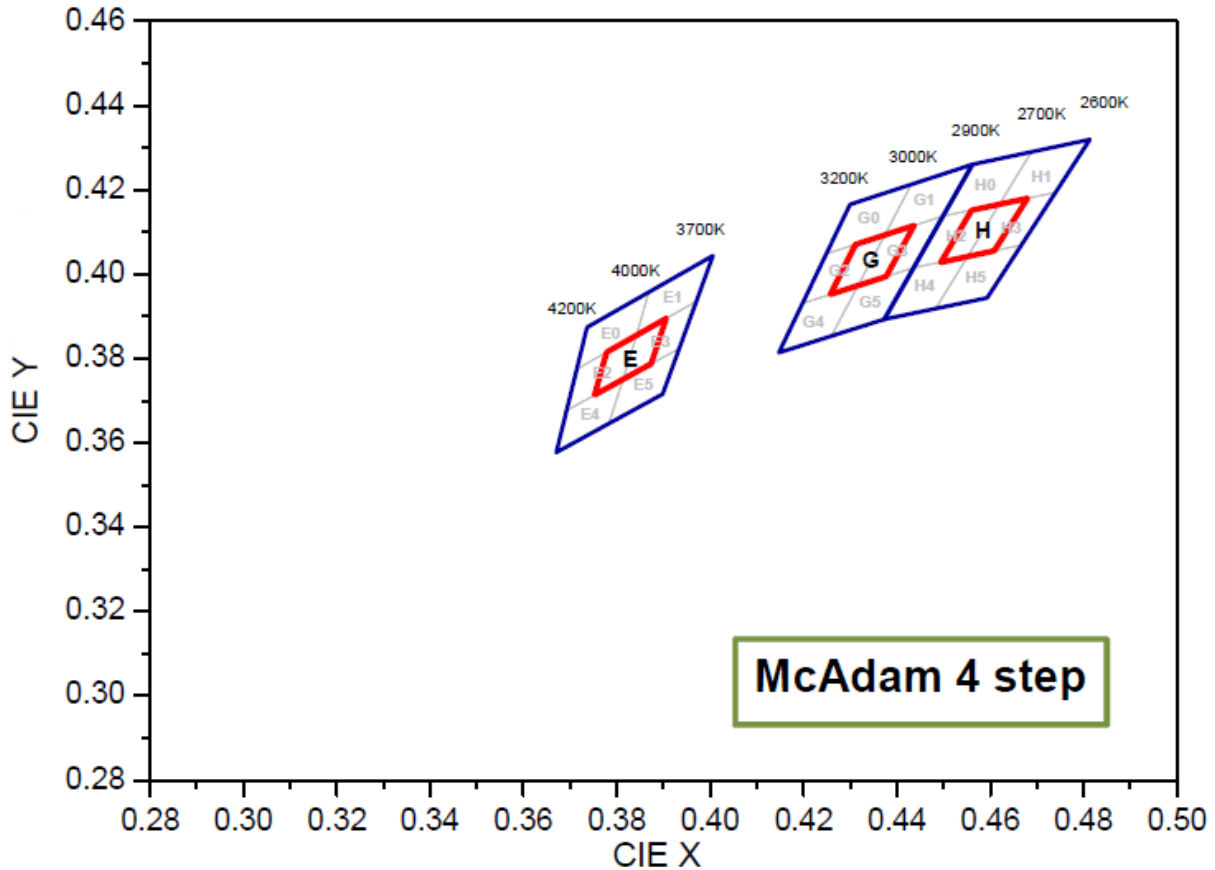
Secure the temperature in your application not to exceed 65°C.  
Read more in the section measurement control.



## Binning structure graphical representation

Binning structure graphical representation IEC 1976

*Note the availability and representation on the IEC 1976 graph shown below.*



\* Note that the Blue boxes represent Energy Star Rank

SHORT FORM IN DIAGRAM	COLOUR CODE	CCT
H	27	2700K
G	30	3000K
E	40	4000K



## Binning and Labeling

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### Colour Rendering Index (CRI)

INTENSITY CODE	CRI (MIN) RA
7	70
8	80
9	90

### Short form letters for CCT

COLOUR CODE	CCT
27	2700K
30	3000K
40	4000K

### Luminous Flux Bins pro LED

INTENSITY CODE	LUMEN OUTPUT (LM)
3	>2000
4	>2000
5	>2000
6	>2000
7	>2000
8	>2000

## Measurement Control

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The recommended maximum value is 65°C on Tc or measuring point. If this value is exceeded we cannot guarantee the function and the lifetime of the product. The purpose of the measurement is to control the Junction (Tj) temperature of the LED and also in order to control the performance on the complete setup. By measuring the junction temperature (Tj) the average lifetime of the product is known.

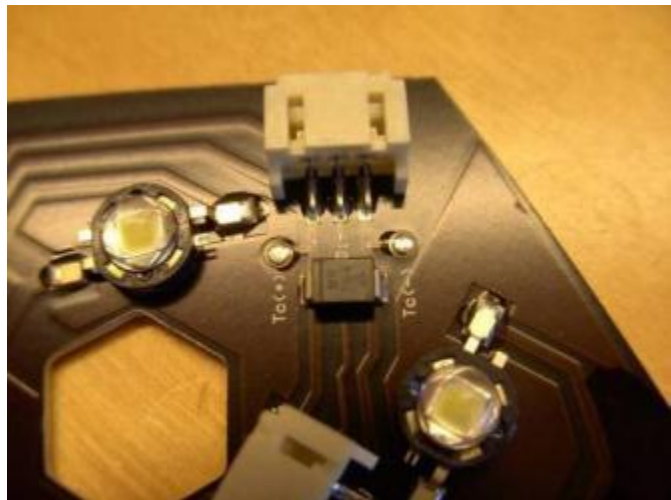
The thermal connection is measured in temperature vs. Power.

### Measurement points

When the measurement takes place you verify that the temperature on the marked measurement points are satisfying. Pending on the result you know what lifetime to expect from the module.

#### Measurement points

- TC



This step will be implemented after the heat sink has been connected properly!



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## Lifetime (Calculated)

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The lifetime is calculated at the maximum temperature recommended at the  $T_c$  (measuring point). It is important not to exceed this recommendation; you find more information under the chapter “measurement control”.

UNIT	TC MAXIMUM	50% DEGRADATION <i>L<sub>50</sub></i>	30% DEGRADATION <i>L<sub>70</sub></i>
SVEA (700MA)	65° C	>50 000 hours	>50 000 Hours



## Precautions for use

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- This device should not be used in any type of fluids such as water, oil, organic solvent etc.
- When cleaning is required, use only water together with mild soap on the outside of the lens. Cleaning inside of the LED module is strictly prohibited.
- The appearance and specifications of the product may be modified for improvement without notice.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- Opening of the LED module is prohibited due to risk of EMC, dust, grease and other exposures that will damage it.
- The LED Module should always be mounted to a proper heat sink before it's connected with its proper leads.

### Handling in regards to static electricity

- The Optodrive products have integrated circuits (IC) on board that may be damaged if exposed to static electricity. Please handle the products only while using equipment that prevents static electricity. Do not handle them without having ESD protection.
- The Optodrive products are not be installed into the end product without proper ESD protection.

### Storage before use

- Use only properly rated test equipment and tools for the rated voltage and current of the product being tested.
- It is strongly suggested to wear rubber insulated gloves and rubber bottom shoes while handling the product.
- Do not wear any conductive items (such as jewelry) which could accidentally contact electric circuits.
- Faults, lightning, or switching transients can cause voltage surges in excess of the normal ratings.
- Internal component failure can cause excessive voltages.
- Stored or residual electricity in long wire could be hazardous.





## ROHS Compliant

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All our LED modules meet the Restrictions of Hazardous Substances (RoHS)!

There has been a growing consensus that Lead Free Systems should increase for the safety of our environment. It is a very serious problem that lead and other harmful materials are being used in commercial and industrial products, causing more and more environmental problems. This has led to regulations such as RoHS (Restriction of the use of certain Hazardous Substances) from the EU and the Japan Ministry of Trade and Industry (MITI). All LED module makers providing products to these countries should comply with these restrictions. In order to meet the RoHS regulation, Optoga is strictly implementing a ban on lead and other hazardous materials in its products. This is in compliance with our responsibilities as good corporate citizens.

### Design for Environment:

According to the EU-directive 2002/95/EC (RoHS) the following substances must not be used in this product

- Lead (Pb) alloys
- Mercury (Hg)
- Cadmium (Cd)
- Chromium (6+) compounds

# Do you want to know more about benefits of OptoDrive LED?

Read more about OptoDrive at [www.optodrive.se](http://www.optodrive.se).

You can contact us via [info@optoga.com](mailto:info@optoga.com).

Obviously, you can also call us on +46 (0)589 490 950.

## Optoga AB

Optoga was founded in November 2004 in Arboga, Sweden and has many years of experience in electronics design. The company develops and supplies LEDs and LED-module solutions for the lighting industry, vehicle manufacturers and electronics companies.

With the OptoDrive LED-module, Optoga has taken the initiative to replace strip lights, incandescent and halogen bulbs with LED-based sources.



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