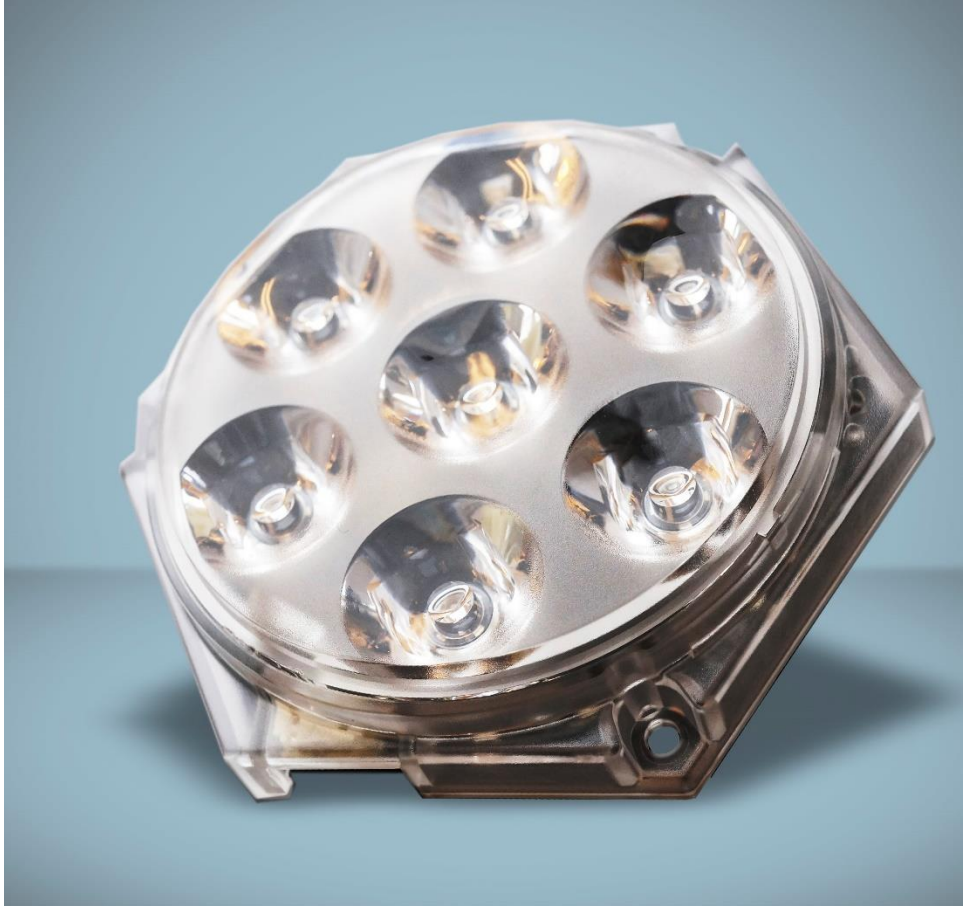




SVEA ID



SVEA ID

7-LED MEDICAL
7W | 10W | 15W

This LED is designed with internal driver and are therefore very easy to connect in applications for 30-36VDC or with external wall outlet transformer.



SVEA ID Medical

Document no:
n/a

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2.11

Page:
Page 2 of 21

Object:
Datasheet SVEA ID 7-LED

Author:
SL

Date:
2019-04-01

The LED Engine is designed with internal driver and is very easy to connect in applications for 24-36VDC or with external wall outlet transformer. The efficiencies are highest available on the market for such applications. Lenses are integrated with a viewing angle of 9°.

As a light source for minor surgery, examination lights and other medical applications such as veterinarian use, Svea medical is designed to meet the following directives: EN60601-2-41 IEC: 2000, UL60601-1 and CAN/CSA-C22.2 No. 601.1-M-90.



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Introduction

Applications

The LED module and light engine is called Svea and it is a design for light fittings and luminaires aiming for the Minor Surgery and Medical area, 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 (90 mm) that have the same footprint as all others in the family. It has significantly greater life and non-catastrophic failure mechanism than related similar products and offers dimming without colour shift or flicker.

Svea package

The same package is used for Down-, Spot-, Task- and Medical light fittings. The solution is developed to make it easy for the design engineers to mix between low to high power and from AC to DC in the same luminaire or in similar design. In the design concept there is standard dimmers with the same snap in connector (that fits the whole Optodrive concept™) as well as several heat sink designs with worldwide distribution.

ID design

ID stands for “integrated driver”, all driver and dimmer components are built in and it works between 12-36VDC with an efficiency over 90%. There is a standard plug in connector that fit all different ID designs as well as all different accessories to dim, communicate, active cooling etc.

Integrated driver

The advantage with a driver that are built in a LED engine is

Lifetime – Connected to the heatsink and are therefore having a controlled environment

Dimming – Dimming via PWM direct connected to the LED engine

Small – No extra boxes

Light output

Colour stability is important to ensure that the installation have a uniform light output.

Parameters as binning, lifetime and thermal control are mostly important for a good result.



Technical attributes

- Energy saving and very good lumen output
- High Colour Rendering
- Uniform Colour temperature
- Controlled lifetime
- Simple integration





Short Form Characteristics

GENERAL	7W	10W	15W
POWER CONSUMPTION	7W	10W	15W
SUPPLY VOLTAGE		30-36VDC	
COLOUR RENDERING INDEX		Ra:98 (R9: 98)	
CORRELATED COLOUR TEMPERATURE		4300K	
BEAM SPREAD		9° and 12°	
LUMINOUS FLUX	700 lm	1 000 lm	1 400 lm
ILLUMINANCE	TBD	18 000 lux	25 000 lux
NUMER OF LED'S		7	

MECHANICAL	7W	10W	15W
BOARD DIMENSIONS		83 mm diameter	
ASSEMBLY HOLES		3 x 3.42 mm	
WIRE CONNECTOR		PHR-3 or similar	
HEIGHT		18.7mm (9° version)	

DIMMING	7W	10W	15W
PWM HIGH LEVEL		4-7V	
PWM LOW LEVEL		0-0.5V	
PWM FREQUENCY ¹		100-20kHz	
EFFICIENCY		>90	
REVERSED POLARITY PROTECTION		Yes	
TRANSIENT PROTECTION		Yes	
OVERVOLTAGE PROTECTION		Yes	
DIMMING SIGNAL			

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

Notes

¹ Frequencies below 20 kHz can create audible sound in the inductor. Dimming at high frequencies above 10 kHz is very non-linear and smooth dimming can only be reached with processor controlled software.



Article Number Structure

ARTICLE NUMBER: SVEA ID.P.30-36.7.9YY-NN

SVEA	Module name (Platform)
ID	Internal driver (Built in)
P	Power (Watt)
30-36	Input Voltage (V)
N	Amount of LEDs
9	CRI
YY	CCT 27 =2700K, 30 =3000K, 40 =4000K
NN	Lens spread angle code

Parameters vs. Article no

ARTICLE NAME	POWER	VOLTAGE	LEDS	CRI	CCT	SPREAD ANGLE
SVEA ID.7.30-36.7.943-8	7W	30-36VDC	7	Ra98	4300K	8°

ARTICLE NAME	POWER	VOLTAGE	LEDS	CRI	CCT	SPREAD ANGLE
SVEA ID.10.30-36.7.943-8	10W	30-36VDC	7	Ra98	4300K	8°
SVEA ID.10.30-36.7.943-12	10W	30-36VDC	7	Ra98	4300K	12°

ARTICLE NAME	POWER	VOLTAGE	LEDS	CRI	CCT	SPREAD ANGLE
SVEA ID.15.30-36.7.943-9	15W	30-36VDC	7	Ra98	4300K	9°
SVEA ID.15.30-36.7.943-12	15W	30-36VDC	7	Ra98	4300K	12°



Accessories

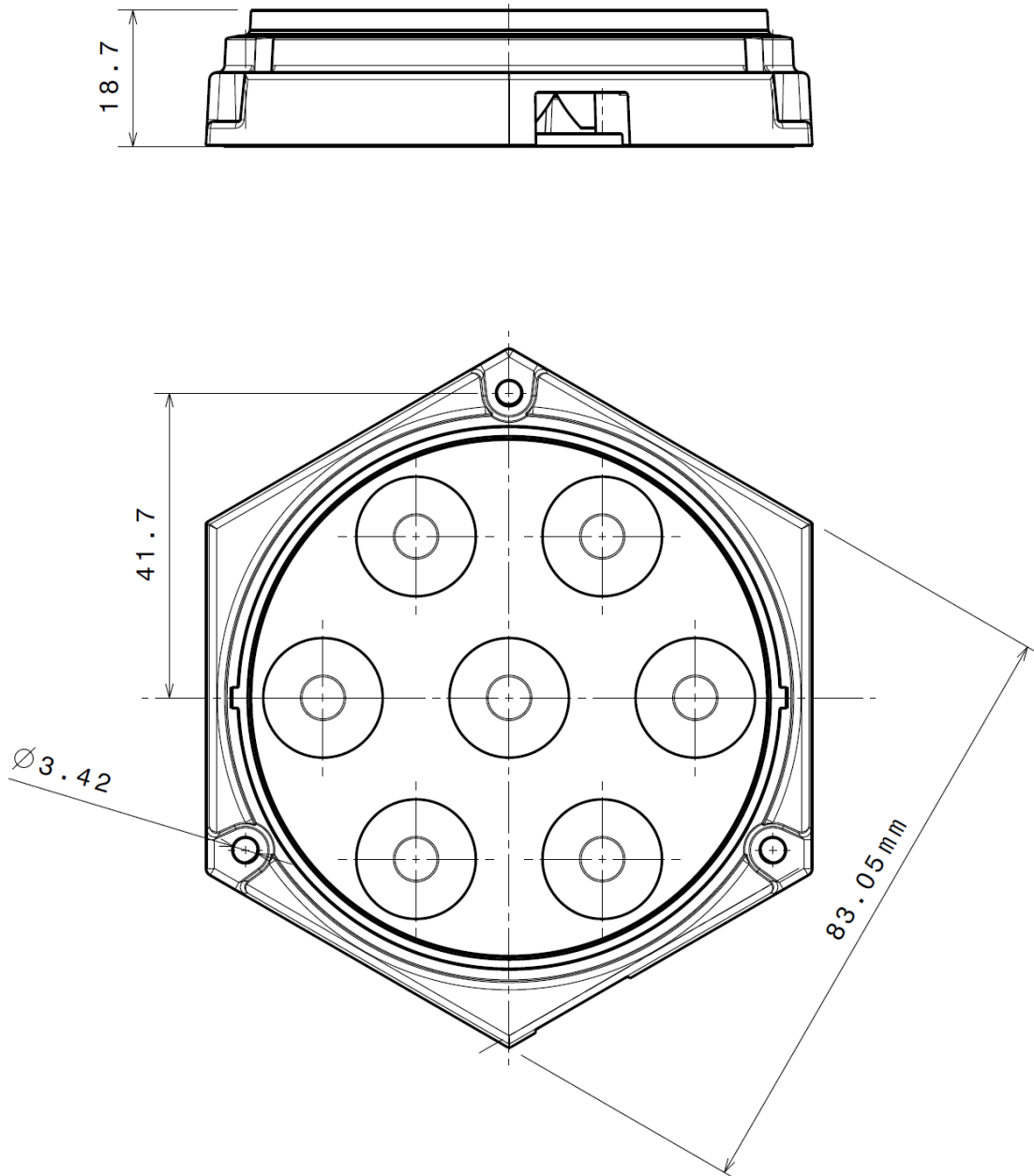
DIMMERS

DIMLIGHT SWITCH	Need external Momentary Switch
DIMLIGHT 3-SWITCH	Need external 3-Switch
DIMLIGHT FLEXSWITCH	Need external Membrane Switch
DIMLIGHT DALI	Need external Dali connection
DIMLIGHT PULSE	Need external Encoder
DIMLIGHT 1-10V	Need external potentiometer
MEMBRAN SWITCH	Suitable for Flexswitch

The dimmers are for digital dimming and can be set up in a network. The dimmers work for all types of OptoDrive™-modules with built-in driver.

Please look into the documentation Accessories.

Dimensions LED Module

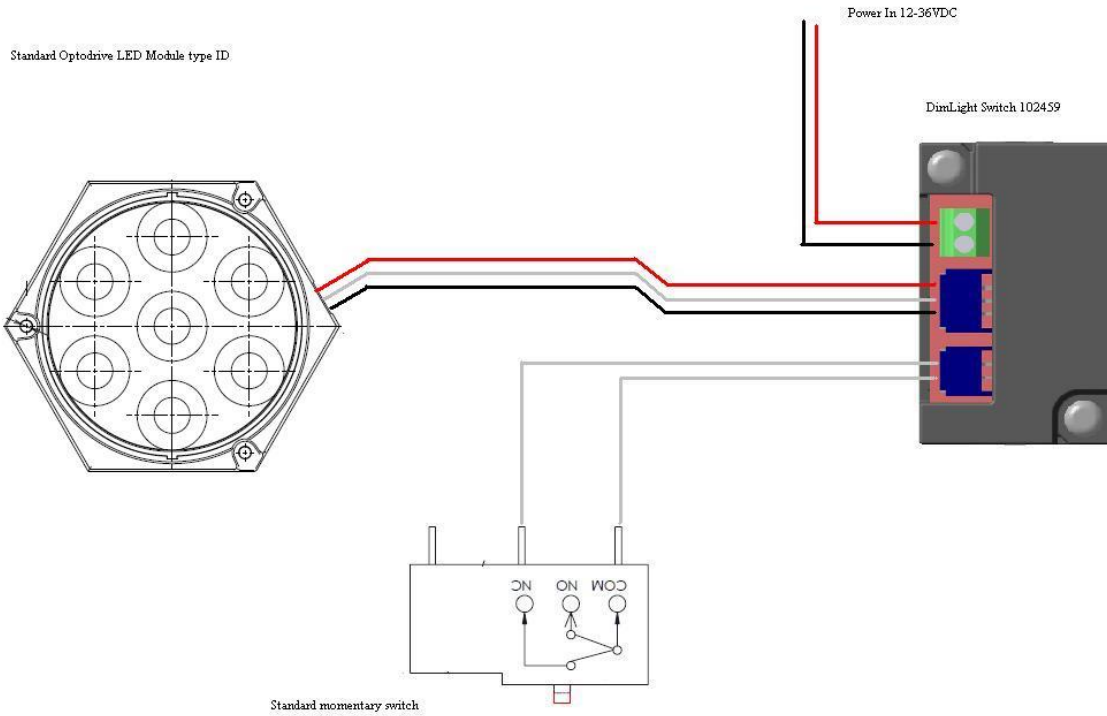


Materials: Lens PMMA

Holder: PC

Wiring Diagram

Standard Wire DimLight Switch





Parameters of the Light Output

Svea ID 7W

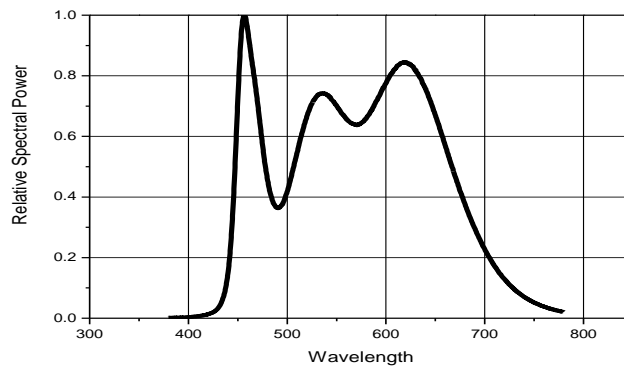
Electro-Optical characteristics LED P=11W, T_c=25°C

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ _v		700		lm
Correlated Color Temperature	CCT		4 300		Kelvin
CRI	R _a		98		-
Power	P _o	6.3	7	7.7	W

(1)See detailed information in chapter” **Luminous Flux Bin**”

(2)See detailed information in chapter” **Binning structure graphical representation**”

SVEA ID 10W	Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
4,000K	98	98	99	97	98	97	96	98	98	98	98	98	79	99	98	97



The LED module fulfill the Cyanosis Observation Index (COI) according to AS/NZS 180.2.5.1997 Section 7.2, Appendix G.



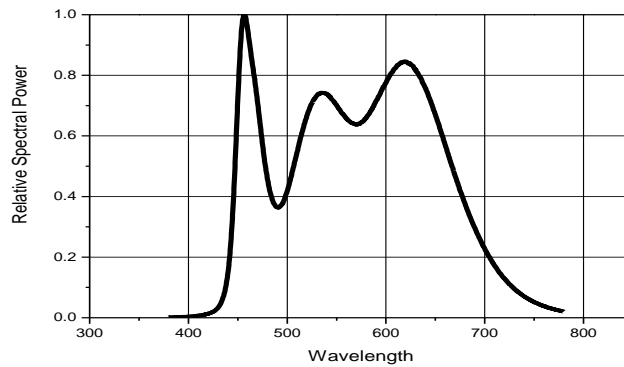
Svea ID 10W

Electro-Optical characteristics LED P=11W, T_c=25°C

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ _v		1 000		lm
Correlated Color Temperature	CCT		4 300		Kelvin
CRI	R _a		98		-
Power	P _o		10	11	W

- (1)See detailed information in chapter” **Luminous Flux Bin**”
- (2)See detailed information in chapter” **Binning structure graphical representation**”

SVEA ID 10W	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
4,000K	98	98	99	97	98	97	96	98	98	98	98	98	79	99	98	97



The LED module fulfill the Cyanosis Observation Index (COI) according to AS/NZS 180.2.5.1997 Section 7.2, Appendix G.



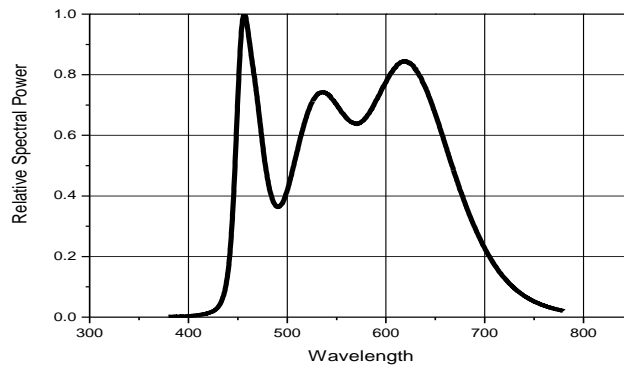
Svea ID 15W

Electro-Optical characteristics LED P=15W, T_c=25°C

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ _v		1 400		lm
Correlated Color Temperature	CCT		4 300		Kelvin
CRI	R _a		98		-
Power	P _o		15		W

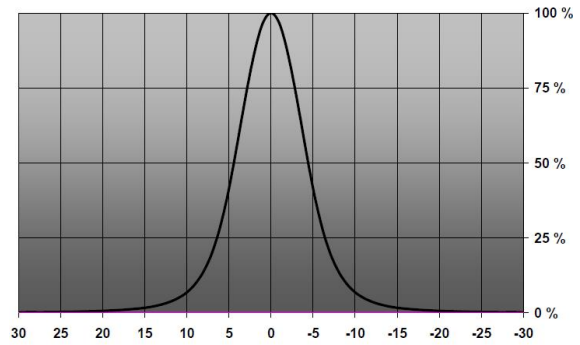
- (1)See detailed information in chapter” **Luminous Flux Bin**”
- (2)See detailed information in chapter” **Binning structure graphical representation**”

SVEA ID 15W	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
4,000K	98	98	99	97	98	97	96	98	98	98	98	98	79	99	98	97



The LED module fulfill the Cyanosis Observation Index (COI) according to AS/NZS 180.2.5.1997 Section 7.2, Appendix G.

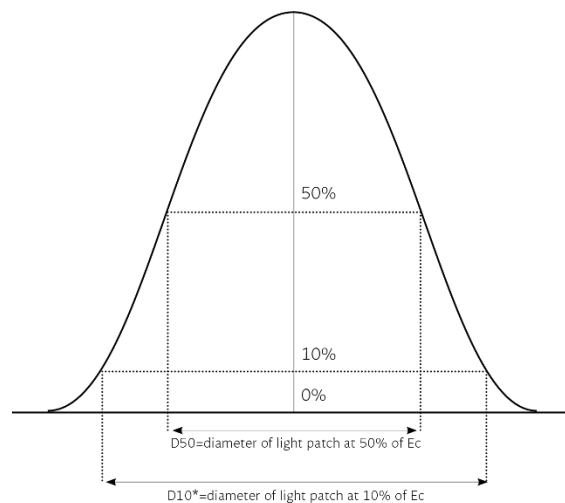
Optics Performance Medical Lighting



Central Illuminance (Ec)

VERSION	LFC	DISTANCE	D50	D10
15W	25 000lx	1 meter	140mm	280mm
10W	18 000lx	1 meter	140mm	280mm
7W				

Working area

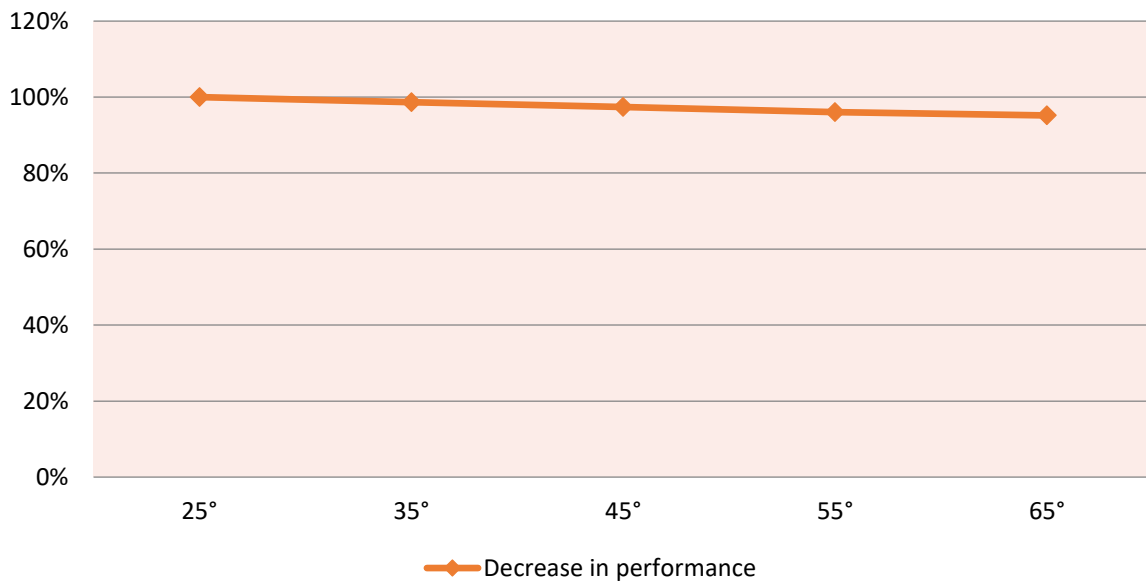


*The D10 should not exceed 2 x D50 to meet the requirements of minor surgery

Electro Optical Data

Temperature Characteristics

Performance vs. Temperature (°C)



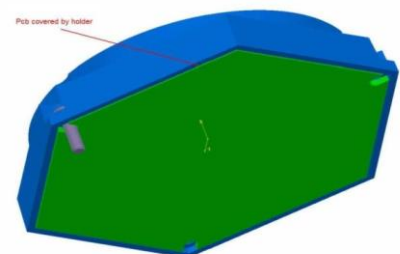
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.

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.





Measurement Control

The recommended maximum value is 65°C on Tc or measuring point. If this value is exceeded we can't guarantee the function and the life time. The purpose of the measurement is to control the Junction (Tj) temperature of the LED and also control the performance on the whole set up. By the help of the junction temperature (Tj) the average lifetime of the product is known.

The thermal connection is measured in temperature vs. Power.

Measurement points

- Tc (- and +)

This measurement is to be done when the heat sink is connected properly!



Lumen Maintenance Projection (IES TM-21-11)

The lifetime is interpolated at the maximum temperature recommended at the Tc (measuring point) on the LED module. It is important not to exceed this recommendation; you find more information under the chapter “measurement control”.

	TC	L₇₀ (30% DEGRADATION)	L₈₀ (20% DEGRADATION)	L₉₀ (10% DEGRADATION)
SVEA ID.15.30-36.7.943-8	55°C	>50 000 h	>50 000 h	>20 000 h
SVEA ID.10.30-36.7.943-8	55°C	>50 000 h	>50 000 h	>25 000 h
SVEA ID.7.30-36.7.943-8	55°C	>50 000 h	>50 000 h	>25 000 h

This is to be considered as information only!



Precautions for Use

- 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 jewellery) 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 II Compliant

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

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 II 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 2011/65/EU (RoHS II) the following substances must not be used in this product

- Lead (Pb) alloys
- Mercury (Hg)
- Cadmium (Cd)
- Chromium (6+) compounds
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ethers (PBDE)



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Datasheet SVEA ID 7-LED

Author:
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Date:
2019-04-01

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

Read more about OptoDrive at www.optoga.com.

You can contact us via info@optoga.com.

You can also call us on +46 (0)589 490 950.

Optoga ABd

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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