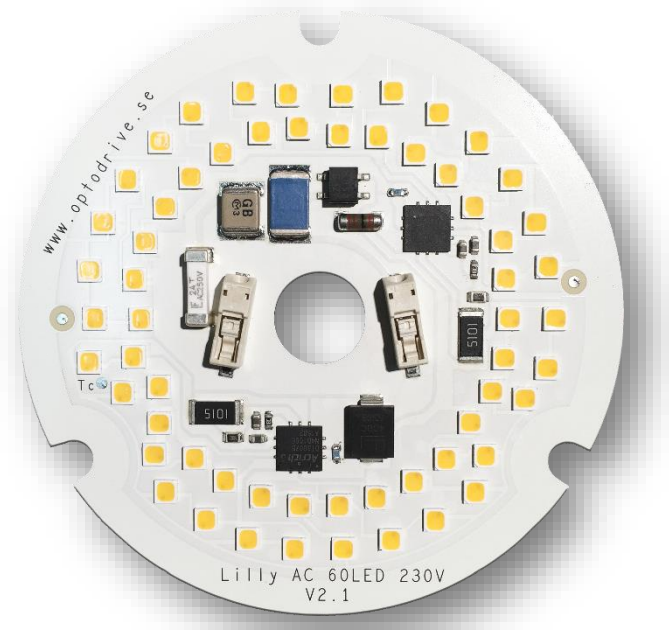




LILLY AC



LILLY AC

10W | 22W | 32W

A qualified solution to replace and exceed CFL and CDM solutions in Downlights or ambient luminaires.

No driver is required!





LILLY AC 230W

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Author:
SL

Date:
2016-07-12

Designed for retail stores, offices, hospitals and other places where the need is to create a good atmosphere for people to dwell in whether they take care of business or socialize.

These LED modules or Light engines for Downlights and ambient luminaires are designed with internal drivers and are therefore very easy to connect into applications with different dimming scenarios. The light output efficiency is the highest available on the market for these types of applications. Our latest design feature TOD (thin optical device) is integrated in the LED module for a bright and consistent light experience.



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Introduction

The LED module and light engine is named Lilly 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 Lilly (~90 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.

Lilly package

The same package is used for Downlight, Mood light fittings etc. The solution is developed to make it easy for the designers and engineers to integrate into luminaires and light fittings. In the design concept there are standard dimmers to be used. The wires are connected via snap in/wire trap connectors

AC design

All driver and dimmer components are built-in and operate at 110, 230 or 240 VAC depending on the version with efficiency above 90%. It has a standard plug-in connector that fits all the different AC designs.

Integrated driver

The advantage with an AC driver that has been built-in is:

- Lifetime – Connected to a heat sink and therefore has a controlled environment
- Dimming – Dimming via standard trailing edge dimmers
- Small – No extra boxes
- Simple – Easily adapted into to the production line

Light output

Colour stability is important to ensure that the installation has a uniform light output. Parameters such as binning, lifetime and thermal control are vital for good results.



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Technical attributes

- Energy saving and a very high lumen output
- High Colour Rendering
- Uniform Colour temperature
- Controlled lifetime
- Simple integration
- High Power Factor
- Low Total Harmonic Distortion





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Short form Characteristics

MECHANICAL	10W	22W	32W
BOARD DIMENSIONS:	Round Ø 80mm		
WIRE CONNECTOR:	Poke in		
ASSEMBLY HOLES:	3 x 5.25 mm		

ELECTRICAL	10W	22W	32W
NUMBER OF LED'S:	60		
INPUT VOLTAGE:	230VAC		
POWER:	10W +/-10%	22W +/-10%	25W +/-10%
INPUT CURRENT:	230 mA +/-10% ea.		
POWER FACTOR:	PFC 0.98		
TOTAL HARMONIC DISTORTION:	< 15% THD		
OVER TEMP PROTECTION:	150°C		
SURGE	1000V		

LIGHT	10W	22W	32W
CCT:	2700K, 3000K, 4000K		
CRI:	> 80 Ra		
LIGHT OUTPUT:	1000 lm	2000lm	3000lm
SDCM (MAC ADAM)	3 - 4		

ENVIRONMENTAL OPERATION CONDITIONS:	10W	22W	32W
TEMPERATURE RANGE:	-40°C to 65°C (Absolute maximum temp Tc 65°C)		
RELATIVE HUMIDITY:	10-75%		
AMBIENT AIR PRESSURE:	500-1060 HPa		

Dimming

Use a trailing edge dimmer (TRIAC) and make sure that the dimmer has the capacity to manage the low load of a LEDs power consumption. In some cases the dimmer requires more than one LED module connected in order to work as expected due to the minimum load required for the dimmer to function properly.



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Article number structure

ARTICLE NUMBER: LILLY AC.P.230.N.8YY-130

LILLY:	Module name (Platform)
AC:	AC= 230VAC, ED=External Driver required, ID=Internal Driver
P:	Power (Watt)
V:	Voltage (230VAC)
N:	Amount of LEDs
8:	CRI: 8=Ra>80, 9=Ra>90
YY:	CCT: 27 =2700K, 30 =3000K, 40 =4000K
NN:	Viewing angle code. 130°, NN without any protection or optics

ARTICLE NAME	MODULE NAME	P. SUPPLY	POWER	VOLTAGE	LED	CRI	CCT	VIEWING ANGLE
LILLY AC.10.230.60.827-NN	Lilly	AC	10	230	60	>80	2700	120°
LILLY AC.10.230.60.830-NN	Lilly	AC	10	230	60	>80	3000	120°
LILLY AC.10.230.60.840-NN	Lilly	AC	10	230	60	>80	4000	120°
LILLY AC.22.230.60.827-NN	Lilly	AC	22	230	60	>80	2700	120°
LILLY AC.22.230.60.830-NN	Lilly	AC	22	230	60	>80	3000	120°
LILLY AC.22.230.60.840-NN	Lilly	AC	22	230	60	>80	4000	120°
LILLY AC.32.230.60.827-NN	Lilly	AC	32	230	60	>80	2700	120°
LILLY AC.32.230.60.830-NN	Lilly	AC	32	230	60	>80	3000	120°
LILLY AC.32.230.60.840-NN	Lilly	AC	32	230	60	>80	4000	120°



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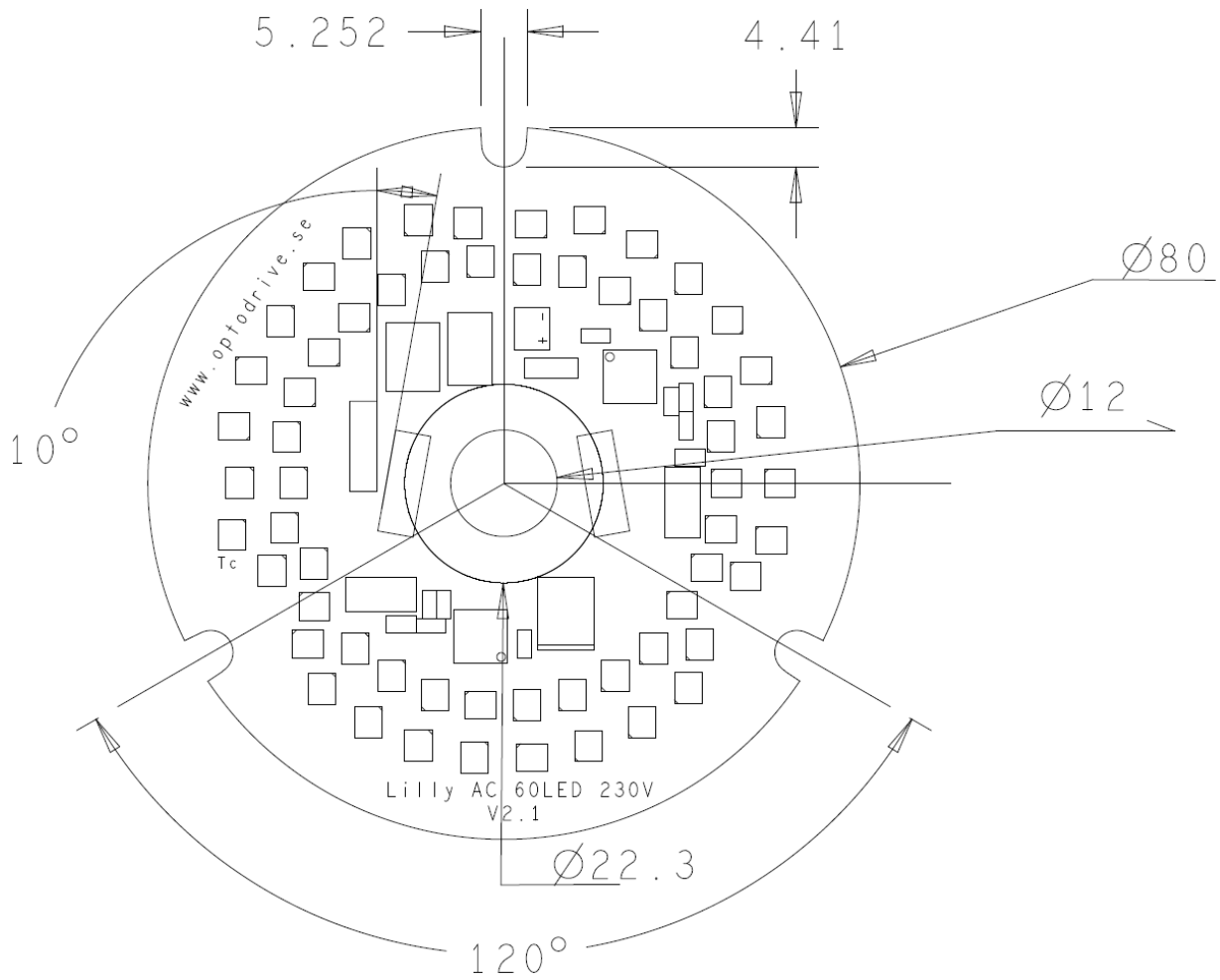
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Dimensions LED Module:





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Wiring diagram



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Parameters of the Light Output

LILLY AC 10W (3000K)

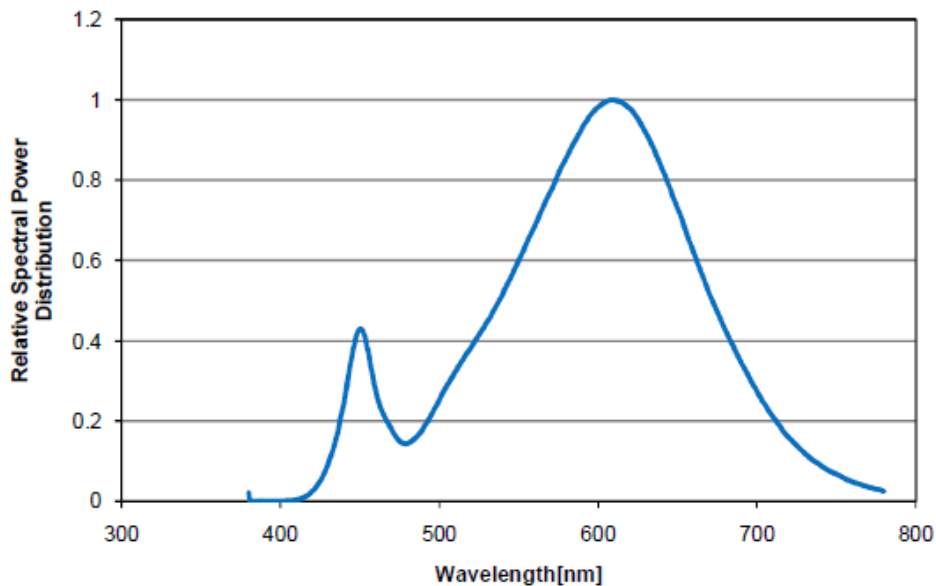
Electro-Optical characteristics LED P=17W, T_c=25°C

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ _v		1000		lm
Correlated Color Temperature	CCT		3000		Kelvin
CRI	R _a		80		-
Power	P _o		10		W

CRI values

Lilly AC	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
10W																

Colour Spectrum

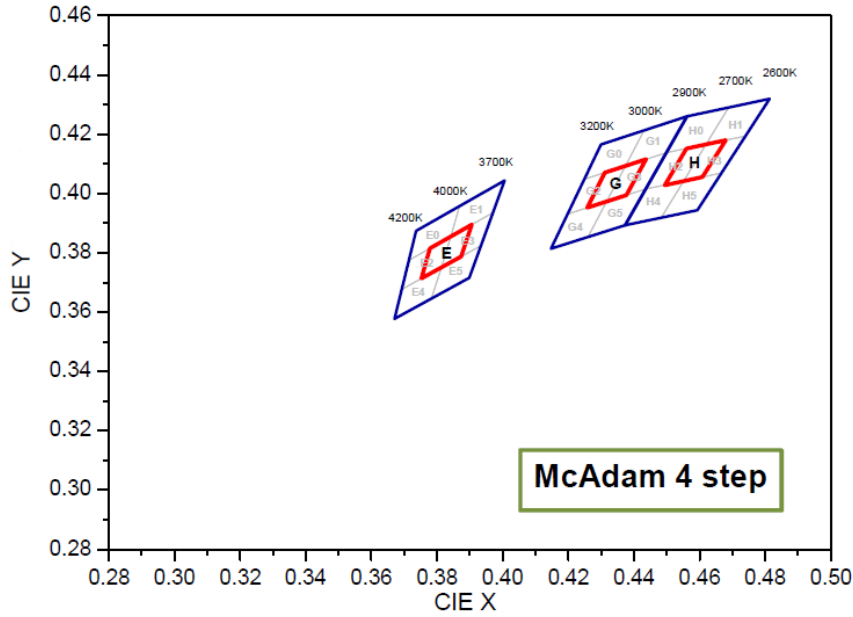




Binning structure graphical representation

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



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Binning and Labelling

Colour Rendering Index (CRI)

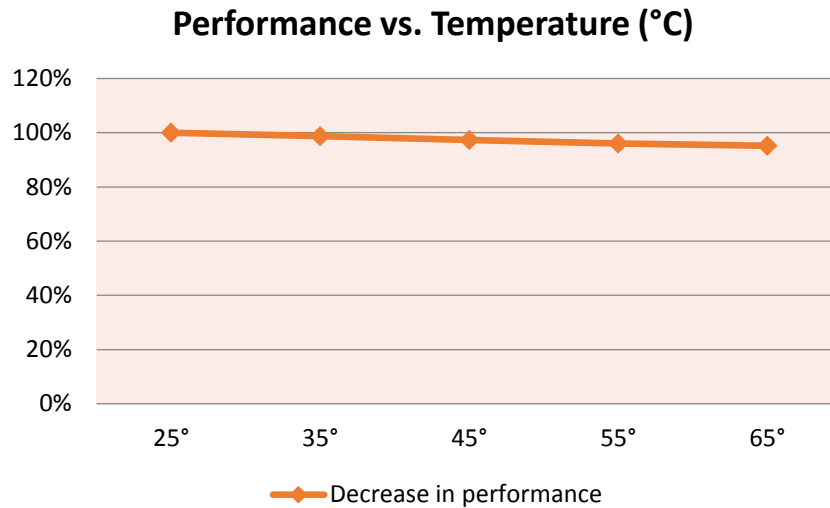
CRI CODE	CRI (MIN) RA
8	80

Short form letters for CCT (K)

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

Electro Optical data

Temperature Characteristics



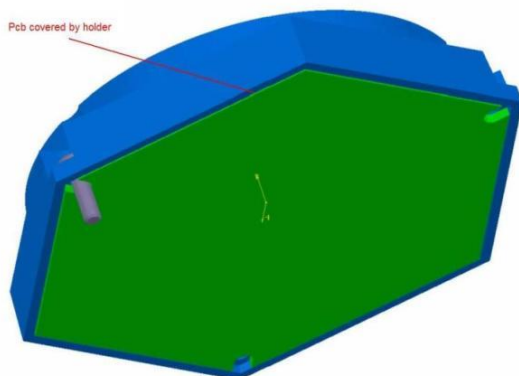
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.

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”.



Measurement Control

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 is 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)

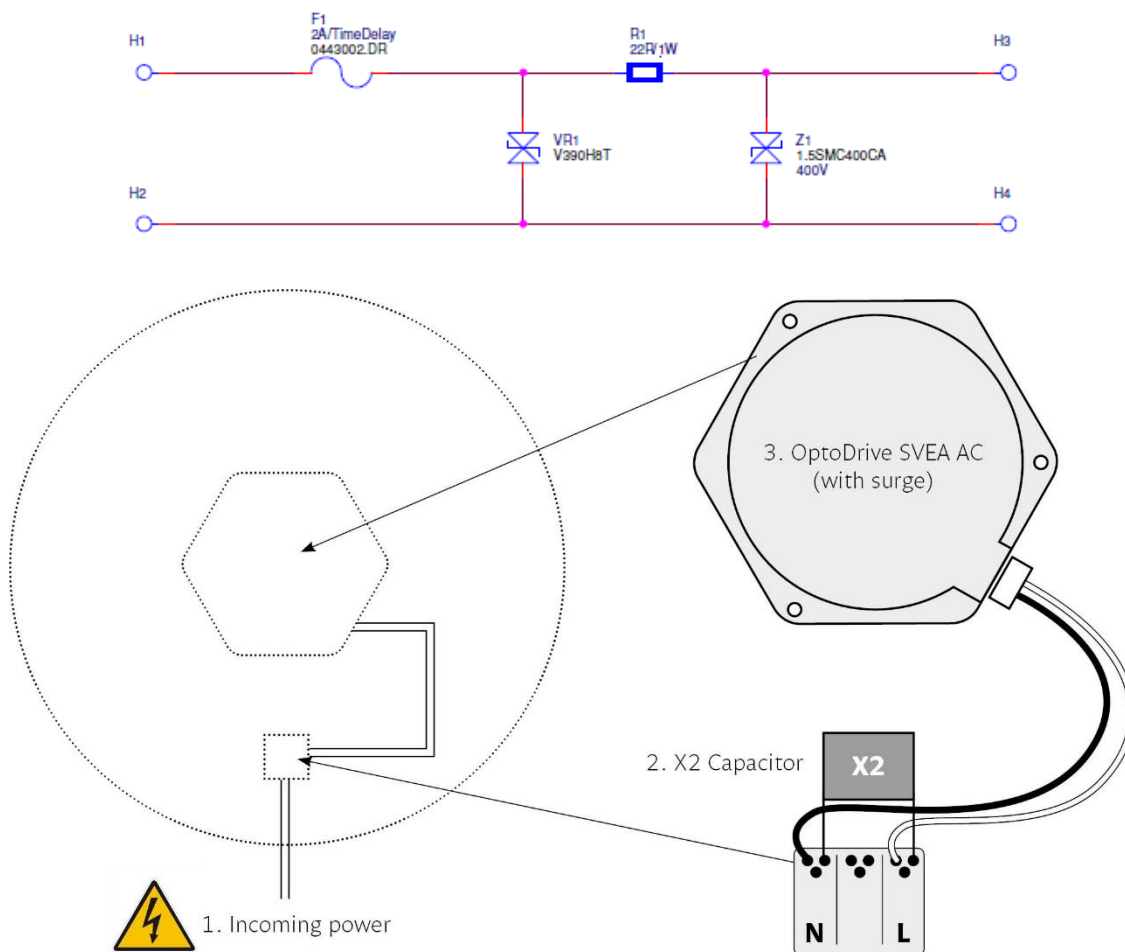
The lifetime is calculated at the maximum temperature recommended at the T_c (measuring point). It is important not to exceed this recommendation; you find more information under the chapter “measurement control”.

T_c (SURFACE TEMPERATURE)	TIME FOR 70% LIGHT-OUTPUT
65°C	50 000 Hr

Surge

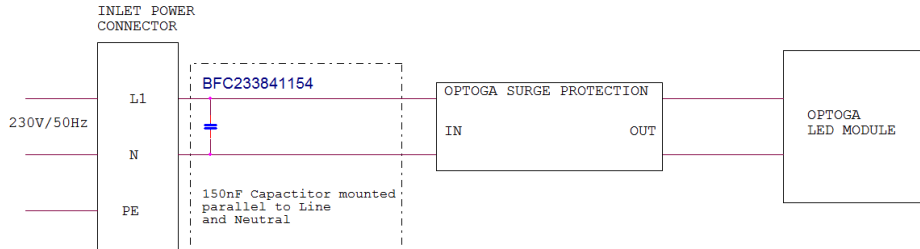
1. Surge

This document specifies how to connect Optodrive AC modules to achieve long life installation both with Surge, Burst and other problematic installation questions:



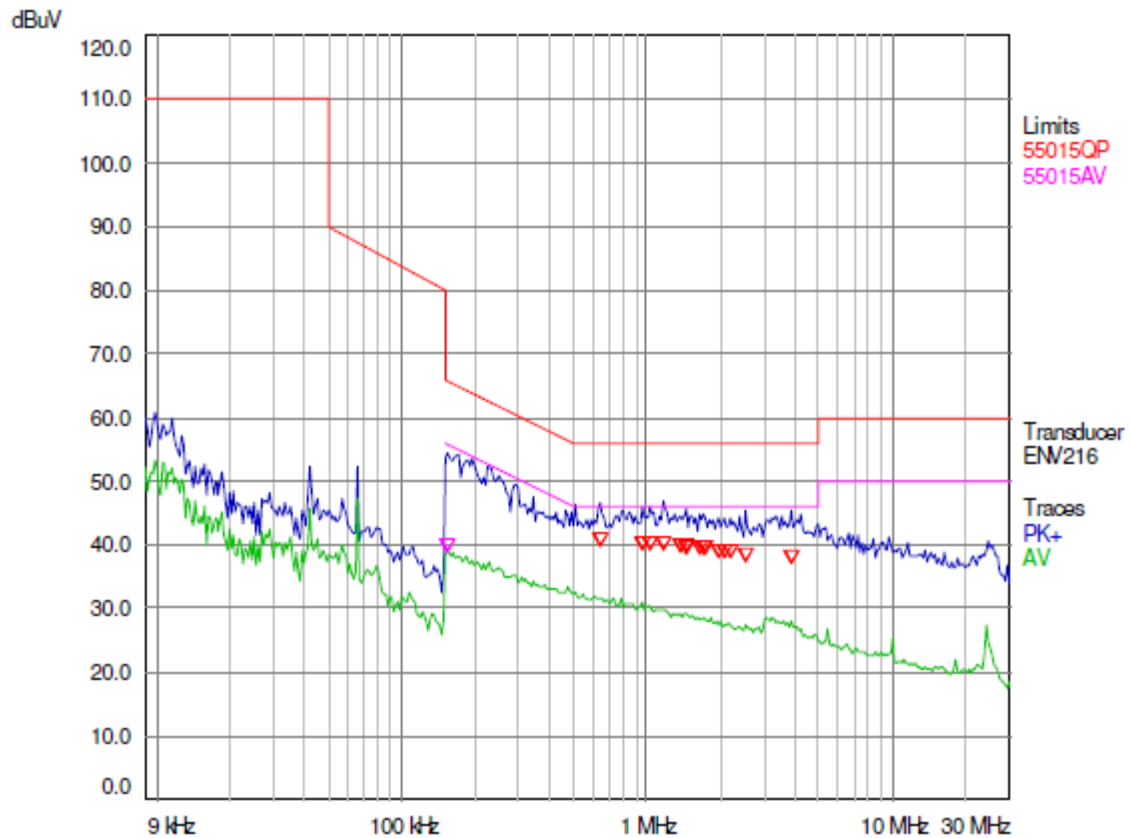
The installation set up requires an X2 Capacitor parallel to L1 and N to handle the fast and high voltage transients generated by the magnetic ballast.

2. Set-up



3. EMC

Pre-measurement Graph





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Verification of Conformity

The module are under testing at Intertek Semco according to IEC 62031 .

TEST	CERTIFICATE	VALUE
EMC	IEC 55015	
SURGE	IEC 61000-4-5	1 kv
FAST TRANSIENT BURST	IEC 61547	2 kv
SAFETY	IEC 62031:2008	



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 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

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



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

Read more about OptoDrive at www.optodrive.se. You can contact us via 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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