



CLARA ID MEDICAL



CLARA ID

3LED / 6LED

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

Applications

The LED module and light engine is named Clara 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 Clara (50 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.

Clara 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.

ID design

ID stands for “Internal and built in driver”. It has a standard plug in connector that fits all different ID 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





Short form Characteristics

GENERAL	3-LED		6-LED	
POWER CONSUMPTION	4W	8W	12W	
SUPPLY VOLTAGE	12-36VDC			
COLOUR RENDERING INDEX	Ra:97			
CORRELATED COLOUR TEMPERATURE	4 000K		3 000K 4 500K	4 000K
BEAM SPREAD	12° and 40°		9.2° and 12.6°	
LUMINOUS FLUX	350lm	600lm	750lm	850lm
ILLUMINANCE	7,000 lux (8W, 12°)		16,000 lux (12W, 9.°)	
NUMER OF LED'S	3		6	

MECHANICAL	3-LED		6-LED	
BOARD DIMENSIONS	48.4 mm diameter			
ASSEMBLY HOLES	2 x 3.8 mm			
WIRE CONNECTOR	PHR-3 or equivalent			
HEIGHT OF THE LED MODULE	15.7 mm			

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

DIMMING SIGNAL:

PWM HIGH LEVEL:	4-7V
PWM LOW LEVEL:	0-0.5V
PWM FREQUENCY ¹ :	100-20 kHz
EFFICIENCY:	>90
REVERSED POLARITY PROTECTION:	Yes
TRANSIENT PROTECTION:	Yes
OVERVOLTAGE PROTECTION:	Yes
DIM INCOMING:	200-20kHz (Processor)
LED LIGHT OUTPUT:	Same as incoming
NO DIM INPUT:	No frequency (stable output)
DIMLIGHT (ALL VERSIONS EXCEPT DALI)	20kHz



Article Number Structure

ARTICLE NUMBER: CLARA ID.P.12-36.N.9YY-NN

CLARA	Module name (Platform)
ID	Internal driver (Built in)
P	Power (Watt)
12-36	Input Voltage (V)
N	Amount of LEDs
9	CRI 97 (CRI93 on 3000K for 3-LED)
YY	CCT 30 =3,000K, 40 =4,000K, 43=4,300K, 45 =4,500K
NN	Lens spread angle code

Parameters vs. Article no

ARTICLE NAME	POWER	VOLTAGE	LEDS	CRI	CCT	SPREAD ANGLE
CLARA ID.4.12-36.3.930-40	4	12-36VDC	3	Ra93	3 000K	40°
CLARA ID.8.12-36.3.930-40*	8	12-36VDC	3	Ra93	3 000K	40°
CLARA ID.4.12-36.3.940-12	4	12-36VDC	3	Ra97	4 000K	12°
CLARA ID.4.12-36.3.940-40	4	12-36VDC	3	Ra97	4 000K	40°
CLARA ID.8.12-36.3.940-12	8	12-36VDC	3	Ra97	4 000K	12°
CLARA ID.8.12-36.3.940-40	8	12-36VDC	3	Ra97	4 000K	40°

ARTICLE NAME	POWER	VOLTAGE	LEDS	CRI	CCT	SPREAD ANGLE
CLARA ID.12.24-36.6.935-9	12	24-36VDC	6	Ra97	3 500K	9.2°
CLARA ID.12.24-36.6.940-9*	12	24-36VDC	6	Ra97	4000K	9.2°
CLARA ID.12.24-36.6.945-9	12	24-36VDC	6	Ra97	4 500K	9.2°
CLARA ID.12.24-36.6.940-12	12	24-36VDC	6	Ra97	4 000K	12.6°

*Standard version





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Accessories

DIMMERS

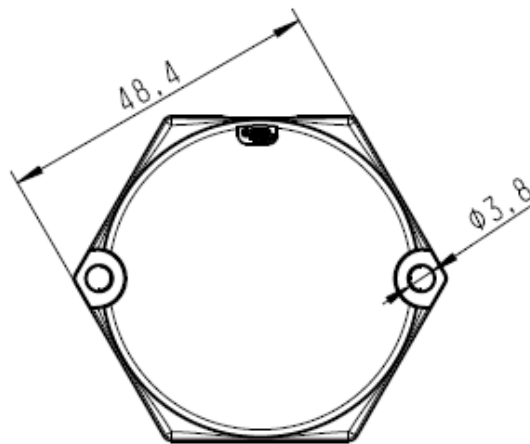
DIMLIGHT SWITCH	Need external Momentary Switch
DIMLIGHT 3-SWITCH	Need external 3-Switch
DIMLIGHT FLEXSWITCH	Need external Membrane Switch
DIMLIGHT DALI	Need external Dali connection
DIMLIGHT PULSE	Need external Encoder
DIMLIGHT 1-10V	Need external potentiometer

OTHER

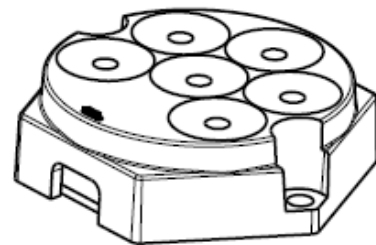
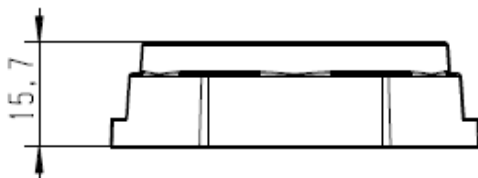
FAN CONTROL	
TOUCHLESS CONTROLLERS	
DALI	

Dimensions of the LED-module:

General top view



Clara 6 LED (ED and ID)



Measurements given in mm



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Mounting

According to ESD Immunity IEC / EN61000-4-2 2009-05-25: 2, medical devices need to deal with 8000V discharge direct contact and 15000V at air discharge without direct contact.

Solution 1

The module needs to be grounded to divert these discharges without damaging the electronics.

Solution 2

By installing a heat pad that is not electrically conductive together with nylon screws the module can deal with that and cope with this (without ground).

Parameters of the Light Output

CLARA ID 8W 3-LED

Electro-Optical characteristics LED P=8W, T_c=25°C

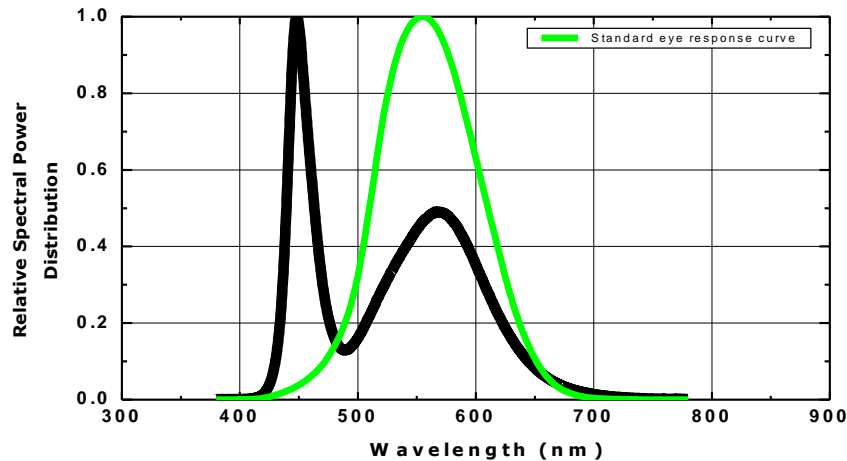
Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ_v		600		lm
Correlated Color Temperature	CCT		4 000		Kelvin
CRI	R _a	95			-
Power	P _o		8		W

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

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

CLARA ID 8W	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
4 000K	97	97	99	94	96	98	97	99	98	96	97	94	84	98	96	96

White



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

CLARA ID 12W 6-LED

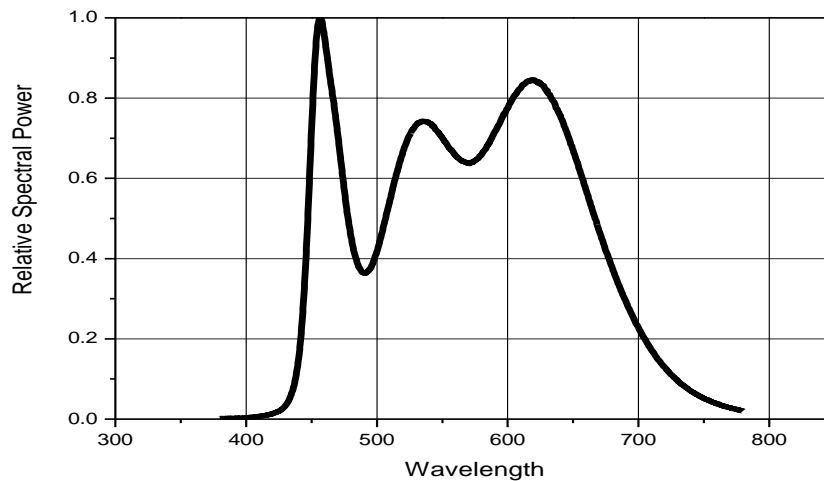
Electro-Optical characteristics LED P=12W, T_c=25°C

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ _v		850		lm
Correlated Color Temperature	CCT	3 800	4 000		Kelvin
CRI	R _a	97			-
Power	P _o		12		W

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

CLARA ID 12W	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
3 800K	97	98	97	94	98	97	96	99	97	88	91	97	83	98	96	97

White

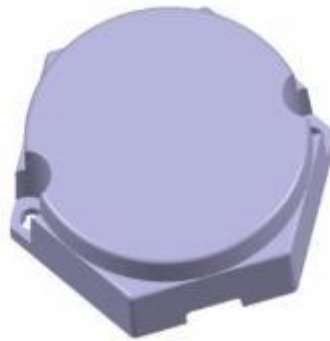
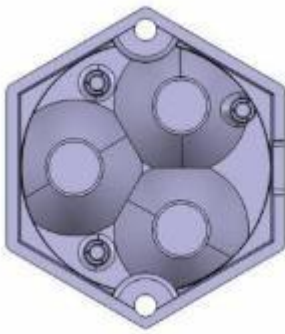


The LED module fulfill the Cyanosis Observation Index (COI) according to AS/NZS 180.2.5.1997 Section 7.2, Appendix G.

Parameters of the Lens system

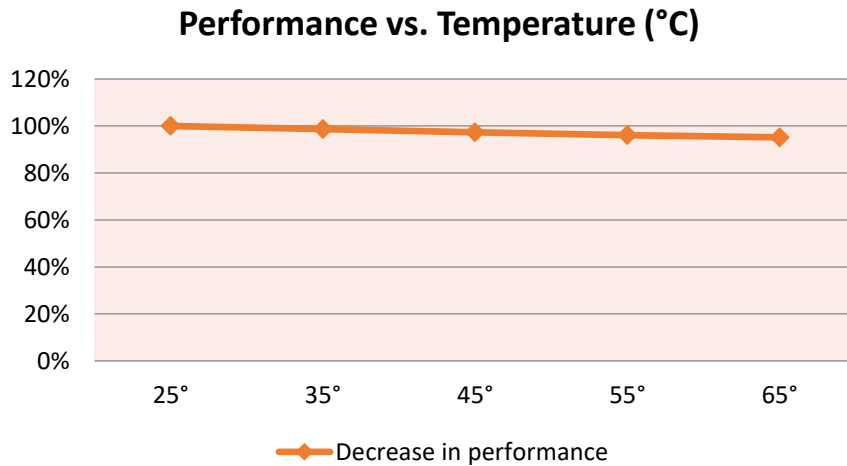
Lens material optical grade PMMA.

- 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 two screws
- Compact dimensions



Electro Optical data

Temperature Characteristics



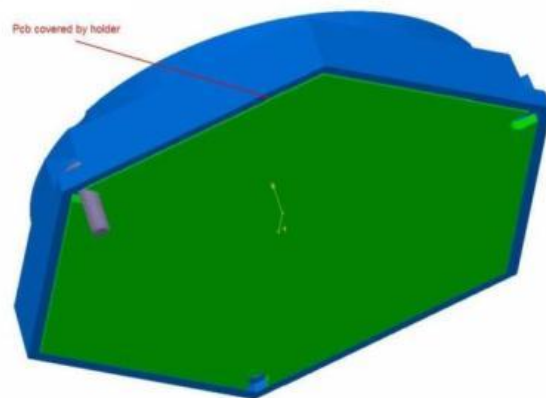
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.

Thermal information

The thermal area (green) has to 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 on how to measure temperatures.



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.

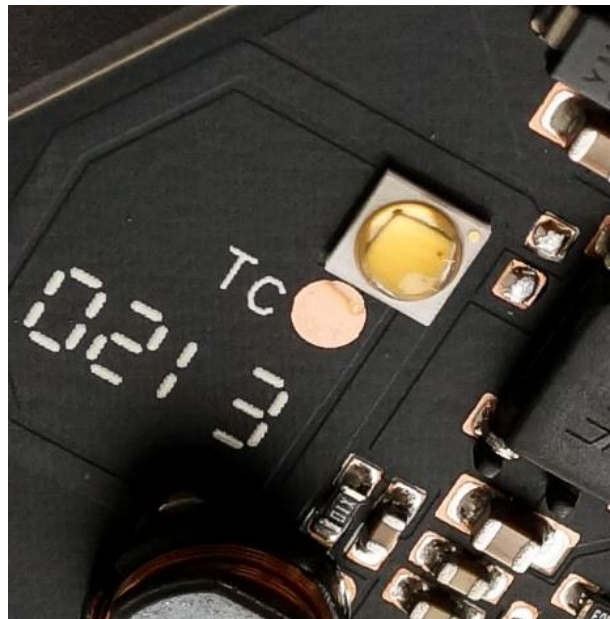
Measurement points

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

Measurement points

- TC

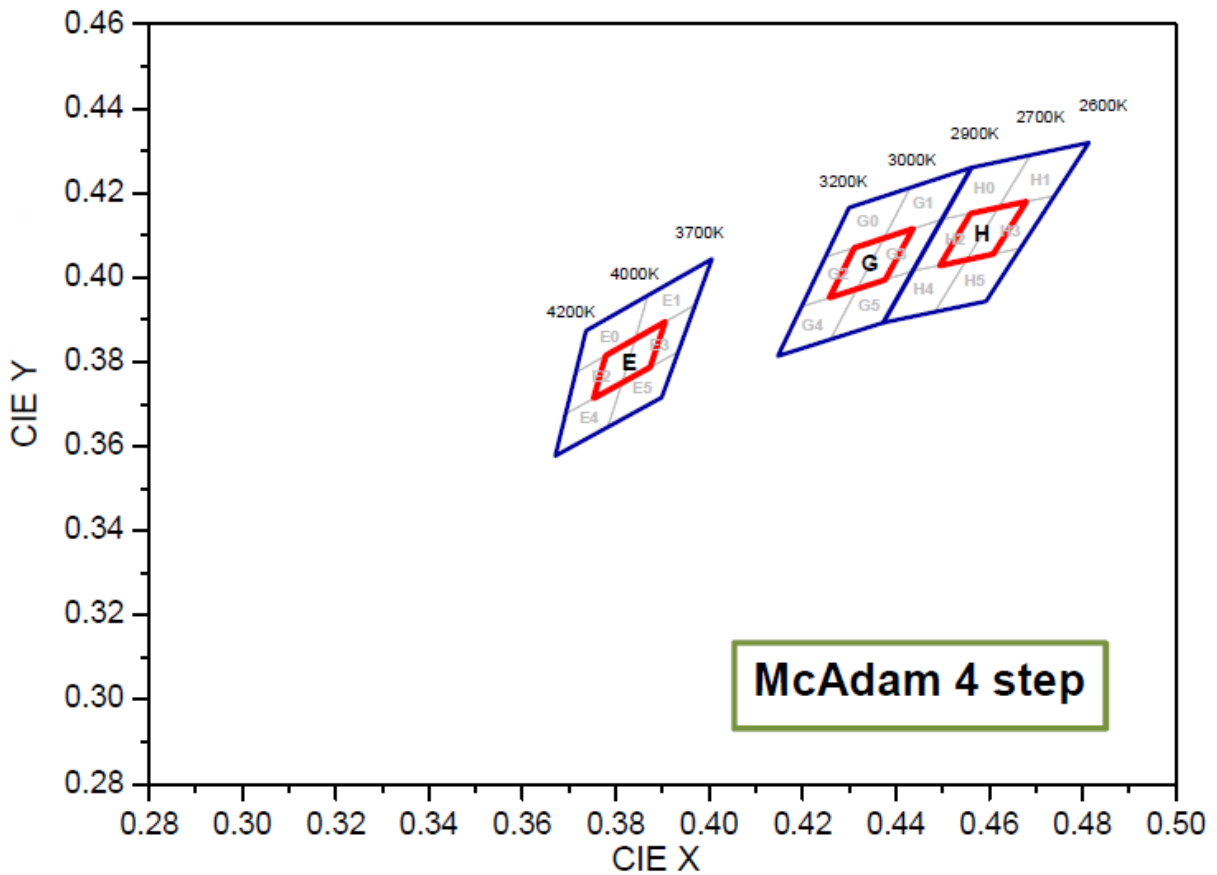
This step will be implemented after the heat sink has been connected properly!



Binning and Labeling

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



TM21 Lifetime (Calculated)

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

Clara 3 LED

Unit	Tc	L70	L80	L90
Clara 3, 4, 5 and 8W Clara ID.P.12-36.3.9yy-10	65° C	> 50 000 Hours	TBD	TBD

Clara 6 LED

Unit	Tc	L70	L80	L90
Clara ID.12.24-36.6.9yy.9	65° C	> 50 000 Hours	41 000 hours	19 000 hours
Clara ID.12.24-36.6.9yy.9	55° C	> 50 000 Hours	49 000 hours	25 000 hours



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 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)

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 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.



Köpingsvägen 4 • SE-732 31 Arboga • SWEDEN

Tel +46 (0) 589 490 950

info@optoga.com • www.optoga.com

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