LILLY80 AC IoT

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10W | 20W

Compact round LED-light engine for pendants with wireless Casambi and wire DALI technology. By installing a DimIn DALI Memory module on-site, the system supports energy monitoring, diagnostics, and predictive maintenance.

No driver is required!

Key features

Lilly80 is specifically crafted for light fixture manufacturer and their design of downlights and environments where the focus is on creating a welcoming and comfortable ambiance, whether for social interactions or professional tasks. With integrated drivers, these AC LED light engines simplify installation and offer versatile dimming options. Lilly sets a new benchmark for efficiency, delivering outstanding light output tailored for both aesthetic and functional lighting needs.

1. Integrated Smart Lighting
    - Built-in drivers with possible support for **DALI**, **Casambi**, and other smart control systems, offering seamless dimming options.
2. Effortless Connectivity
    - Direct connection to **230VAC** with no external drivers required, simplifying installation across different environments.
3. Flicker-Free Dimming
    - Provides smooth, flicker-free dimming using either standard dimmers or smart control protocols for consistent, comfortable lighting.
4. IoT-Ready
    - Easy integration into **IoT ecosystems**, enabling smart control and energy efficiency for both personal and commercial applications.
5. Sustainable Design
    - Compliant with the latest **EU circular economy** directives, making it both eco-friendly and future-proof.
6. Energy monitoring, diagnostics, and predictive maintenance
    - By installing a DimIn DALI Memory module on-site, the system supports DALI extensions 251–253 for energy monitoring, diagnostics, and predictive maintenance.

Content

Introduction

The Lilly80 LED module offers versatile dimming capabilities, working seamlessly with standard dimmers right out of the box. For more advanced, intelligent lighting control, our compact DimIn unit can be integrated, enabling compatibility with DALI, Casambi, or other communication protocols. This opens up new possibilities where the distinction between a single fixture and an interconnected system becomes fluid, allowing for highly personalized and intuitive lighting solutions. The only limit is how you choose to control the light from this LED module.

Lilly80 Package

Designed for pendant applications, the Lilly80 is a round LED light engine with a centered hole for easy wire integration. Its plug-in connectors allow for quick and straightforward setup. With the option to integrate smart systems like DALI, Casambi, or other IoT-based protocols, this module fits into various lighting ecosystems. Additionally, all IoT LED modules feature an electrically isolated heat pad, ensuring safety and compatibility with Class II fixture installations.

Light Quality

Maintaining color stability is a priority, ensuring consistent and even light output throughout the installation’s lifespan. Key parameters such as precise binning, long lifetime, and efficient thermal management are carefully controlled to deliver superior performance and longevity.

Dimming Capabilities

Lilly80 stands out with its impressive dimming capabilities. Whether using traditional phase dimmers or advanced communication protocols like DALI or Casambi, this module minimizes flicker and other unwanted effects, ensuring a smooth and pleasant lighting experience.

High-Resolution Analog Dimming

When controlled by a DimIn module, Lilly80 processes dimming commands via a 10 kHz interface. Inside the LED module, the signal is transformed into analog current regulation using amplitude modulation (AM), completely avoiding PWM.
This ensures flicker-free light, high precision at low dimming levels, and predictable electrical performance for lighting controls and energy-aware applications.

Smart Lighting

The Lilly80 LED module is IoT-ready, designed to integrate easily with systems like Casambi, DALI, or other communication standards. Our goal is to make smart lighting accessible to small and medium-sized manufacturers, allowing them to incorporate advanced controls without requiring extensive technical expertise. Whether it's straightforward integration or the addition of new smart features, the process is simple, aligning with the latest EU directives on the circular economy for sustainable, future-proof solutions.

The Lilly80 module is designed to integrate seamlessly with IoT systems, enabling advanced control options such as Casambi, Ingy and DALI. Whether for energy monitoring, detailed device data, or human-centric lighting applications, this module transforms traditional fixtures into intelligent, connected systems.

Smart Lighting with IoT

The world of lighting design is evolving rapidly, and smart LED engines are leading the charge. With IoT technology, designers can now integrate DALI and Casambi directly into their lighting systems, creating dynamic, adaptable environments. From enhancing comfort in workspaces to crafting immersive lighting experiences, smart lighting provides an unparalleled level of control.

Imagine having these capabilities built into your LED module from the start, Optoga makes it possible. The compact, sugar-cube-sized DimIn modules are the key. They seamlessly fit into our IoT interface and can be easily swapped between DALI, Casambi, or even basic dimming controls, making smart lighting accessible to everyone. All that's needed is a mains connection (230VAC) and two wires, either for DALI or for connecting a potentiometer or switch.

Platform	Table- or freestanding light	Downlight	Spotlight	Pendent	Medium size Opaque glass	Medium size Opaque glass HCL/TW	Big size Opaque glass
Lilly80 AC IoT	X	X		X	X		
ADA60 AC IoT	X	X	X	X	X		
ADA76 AC IoT	X	X	X	(X)			
Sanna158 IoT	X			X	X		
Sanna158 AC IoT HCL				X		X	
Sanna290 IoT				X			X

DimIn Modules for Ultimate Control

- DALI: Our DALI-compatible device works seamlessly with DALI-2 systems, offering precise control over lighting with bus-powered simplicity. Integration according to IEC 62386.251, 252, 253 for memory bank, energy reporting, diagnostics and maintenance.
- Casambi: Casambi isn’t just wireless control, it’s a smart, connected lighting system that can respond to changing environments, adjust brightness, and create human-centered lighting that enhances well-being and productivity.
- Switch: Use a momentary switch for simple, smooth dimming control in freestanding devices.
- POT: The potentiometer option allows easy dimming (up/down) and on/off functionality, perfect for standalone fixtures.

Potentiometer Control

With our easy-to-use potentiometer, users can enjoy intuitive lighting control. The click mechanism provides tactile feedback for on/off, while a smooth clockwise rotation increases light intensity on a logarithmic scale, ideal for precise control over ambiance.

Short form Characteristics

MODULE CHARACTERISTICS	10W	10W	20W	20W
Power	10W +/-10%	10W +/-10%	20W +/-10%	20W +/-10%
Voltage	120 VAC	230 VAC	120 VAC	230 VAC
Number of LEDs	48	48	48	48
CRI	>Ra90			
Colour temperature	2700K, 3000K, 4000K			
Optics	130° Cover			
MECHANICAL				
Module dimension	Round Ø 80mm			
Inner diameter hole	Ø 12mm			
Height	7.5mm			
Weight	TBD			
Assembly holes	3 x 3.5 mm			
Wire connector	Poke in			
ELECTRICAL				
Input voltage range	100-130 V		220-240V	
Power factor	0.95			
Total harmonic distortion	<15%			
Peak inrush current	TBD			
Inrush current duration	TBD			
Type of current	AC			
Surge protection	2.0kV on board			
Burst protection	2kV on board			
Over temp. protection	150°C			
Energy class	Se full summery			
PHOTOMETRICAL				
Flux nominal (3000K)	1150 lm	1170 lm	2200 lm	2280 lm
Efficiency EPREL	115 lm/W	117 lm/W	110lm/W	114lm/W
SDCM (Mac Adam)	3			
SVM	0,3			
PstLM	0,3			
ENVIRONMENTAL				
Relative Humidity	10-75%			
Temperature range	-40°C to 85°C (Absolute maximum temp Tc 85°C)			
Ambient air pressure	500-1060 HPa			
Life length L70B10*	>50 000h			

Article number structure

LILLY AC.P.230.48.XYY-NN.ZZ

AC	AC= 230VAC, ED=External Driver required, ID=Internal Driver
P	Power (Watt)
V	Voltage: 120VAC or 230VAC
N	Amount of LEDs
X	9=Ra>90
YY	CCT: 27 =2700K, 30 =3000K, 40 =4000K
NN	130 - with cover, D with Diffused Cover
ZZ	Variance code IOT

Packaging information

Lilly80 – Packaging information

Description	Qty (pcs)	Dimension (cm)			GW (kg)
		Length	Width	Height	
Inner Box	30	35,6	22,7	9,6	
Outer Box	180	46,5	37,5	39,6	13,3

DimIn – Packaging information

Description	Qty (pcs)	Dimension (cm)			GW (kg)
		Length	Width	Height	
Inner Box	72	35,6	22,7	9,6	
Outer Box	2304	46,5	37,5	39,6	TBD

Potentiometer – Packaging information

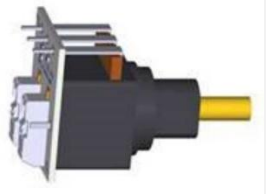
Description	Qty (pcs)	Dimension (cm)			GW (kg)
		Length	Width	Height	
Inner Box	TBD	35,6	22,7	9,6	
Outer Box	TBD	46,5	37,5	39,6	TBD

Article name and versions

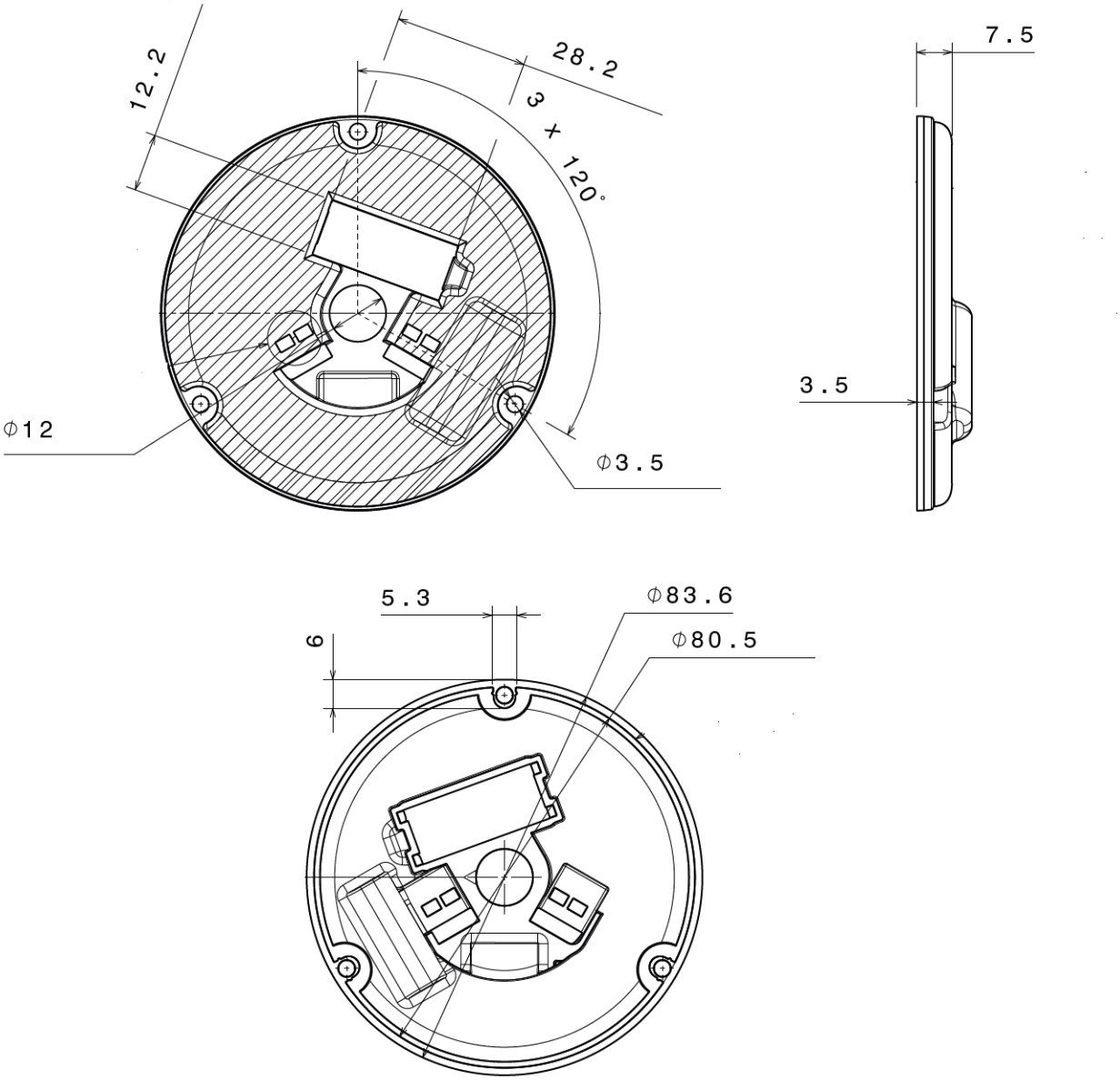
LED Module

ARTICLE NAME	POWER	CURRENT	CRI	CCT	LENS	Lumen		Energy Class
						25°C	65°C	
Lilly80 AC.10.230.48.927-130.IOT.FF	10	230	90	2200	110°	800	720	F
Lilly80 AC.10.230.48.927-130.IOT.FF	10	230	90	2700	110°	1030	920	E
Lilly80 AC.10.230.48.930-130.IOT.FF	10	230	90	3000	110°	1090	1030	D
Lilly80 AC.10.230.48.940-130.IOT.FF	10	230	90	4000	110°	1130	990	D
Lilly80 AC.20.230.48.927-130.IOT.FF	20	230	90	2200	110°	1490	1410	F
Lilly80 AC.20.230.48.927-130.IOT.FF	20	230	90	2700	110°	1940	1860	E
Lilly80 AC.20.230.48.930-130.IOT.FF	20	230	90	3000	110°	2140	2030	D
Lilly80 AC.20.230.48.940-130.IOT.FF	20	230	90	4000	110°	2180	2110	D
Lilly80 AC.10.230.48.927-D.IOT.FF	10	230	90	2200	110°	750	650	F
Lilly80 AC.10.230.48.927-D.IOT.FF	10	230	90	2700	110°	920	830	E
Lilly80 AC.10.230.48.930-D.IOT.FF	10	230	90	3000	110°	970	880	D
Lilly80 AC.10.230.48.940-D.IOT.FF	10	230	90	4000	110°	980	890	D
Lilly80 AC.20.230.48.927-D.IOT.FF	20	230	90	2200	110°	1460	1290	F
Lilly80 AC.20.230.48.927-D.IOT.FF	20	230	90	2700	110°	1840	1650	E
Lilly80 AC.20.230.48.930-D.IOT.FF	20	230	90	3000	110°	1900	1740	D
Lilly80 AC.20.230.48.940-D.IOT.FF	20	230	90	4000	110°	1920	1760	D

DimIn (Function module)

Article code	ARTICLE NAME	DimIn design	DimIn Potentiometer design
105390	DimIn DALI		
105656	DimIn Dali IoT2		
105111	Dimin Casambi		
105652	DmIn Switch		
105040	DimIn PoT		
105148	Dimin Potentiometer		

Dimensions LED Module

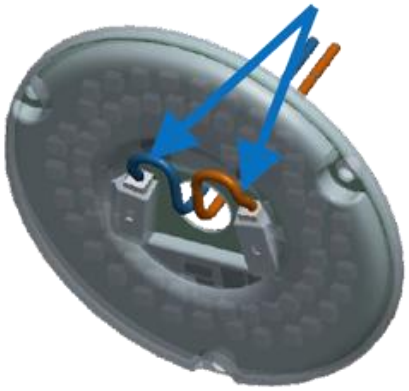


optoga
Köpingsvägen 4
SE-732 31 ARBOGA
Ph: +46 (0)589-490 950
Web: www.optoga.com
E-mail: info@optoga.com

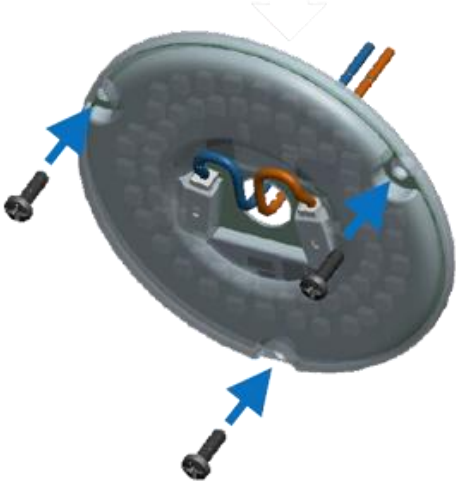
Mounting instructions wires

Mounting

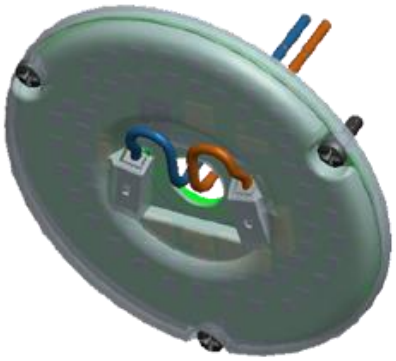
1 Insert the wires into the cover hole.



2 Slot in AC cable into AC connector.



3 Mount the screws to fixate module.



4 Mounted.

Mount the device on heatsink with screws safely

Mounting and Compliance

The IoT version of the LED module includes a dedicated connector (N, L, D+, D–) for easy integration of DimIn function modules such as DALI, Casambi, Switch-Dim, or Potentiometer control.
Modules click securely into the IoT interface without altering the luminaire's appearance, shape, or light quality.

With the high-voltage driver integrated directly into the LED module, no external power supplies are required, connect directly to mains (230 VAC).

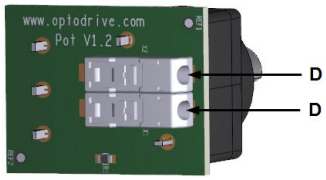
If no function module is installed, the LED module operates in Normal Mode and can be dimmed with a standard dimmer. When a DimIn module is installed, control is handled by the module (DALI, Casambi, etc.), enabling additional functions such as advanced dimming and human-centric lighting.

EPBD 2024/1275 Ready:

By installing a DimIn DALI Memory module on-site, the system supports DALI extensions 251–253 for energy monitoring, diagnostics, and predictive maintenance. This enables BACS compliance under EPBD 2024/1275 and can improve a building's SRI score. See the DimIn datasheet for further details.

The LED module meets all regulatory requirements for electrical connections. All function modules are designed for easy installation by the luminaire manufacturer or even at the end customer's location, allowing flexibility in functionality and upgrades.

Potentiometer card

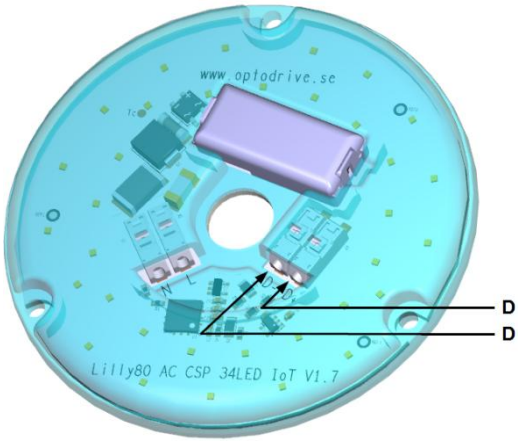


The Pot potentiometer board works with the DimIn Pot functionality module. D + or D- play a certain role as they change the dimming direction depending on the connection.

Wire Connections (DALI or other)

Connect BUS control cables from the DALI control unit or Master unit (standard product that Optoga does not supply) or cables from DimIn Pot to D + and D- on the LED module. This depends on whether there is a DALI or DimIn Pot module mounted on the LED module.

DALI is polarity independent, so it does not matter which of D+ and D- is connected.

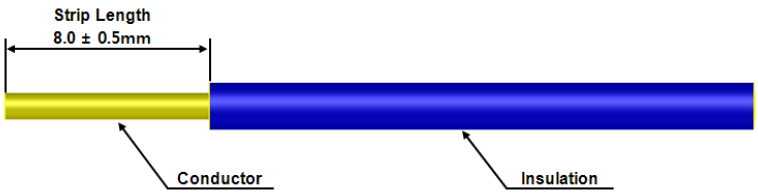


Connector

Type	Push In type

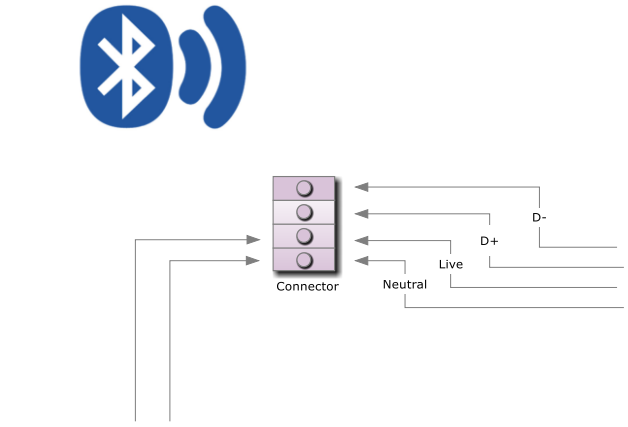
Wire (Recommended)

Type of wire	AWG	mm²
Stranded	22-20	0.32-0.5mm²
Solid	24-18	0.51-1.02Ø (0.2-0.8mm²)
Insulation diameter	Max 2.1 mm	

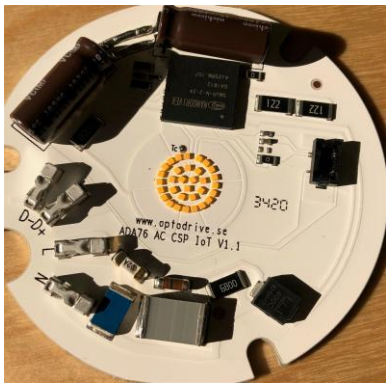


Wiring for different DimIn versions

Casambi

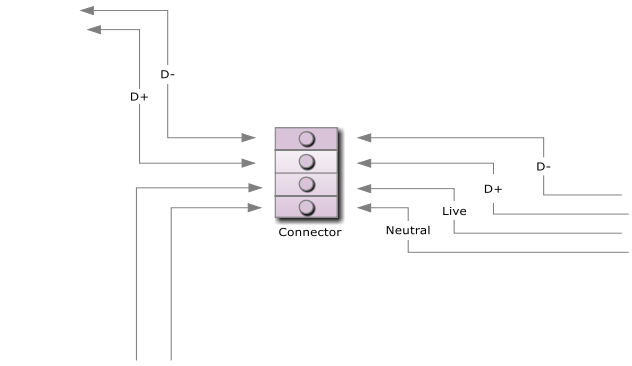


LED Module with IoT (DimIn Casambi)

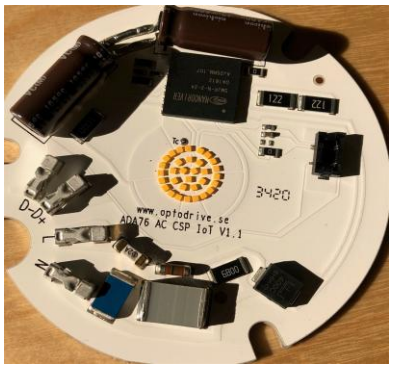


DALI

DALI BUS Incoming

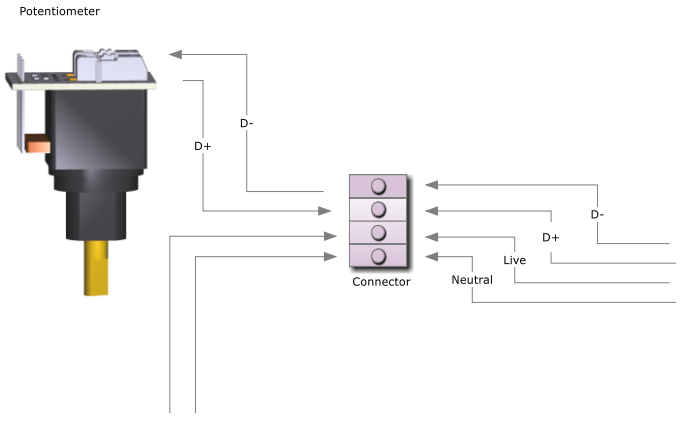


LED Module with IoT (DimIn DALI)

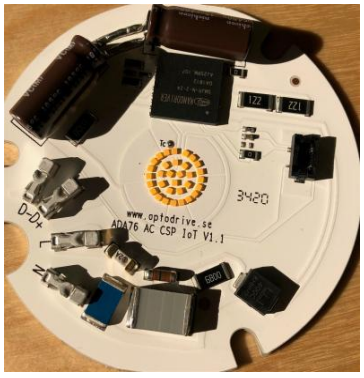


POT / Potentiometer

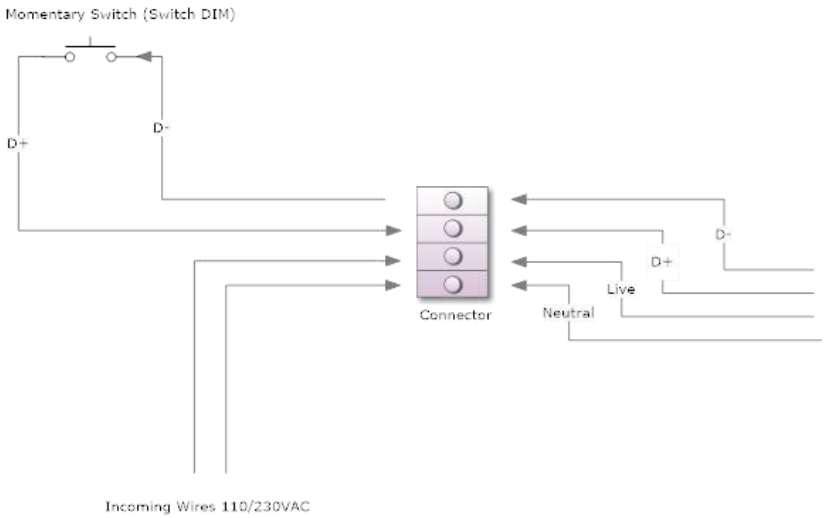
Potentiometer



LED Module with IoT (DimIn POT)

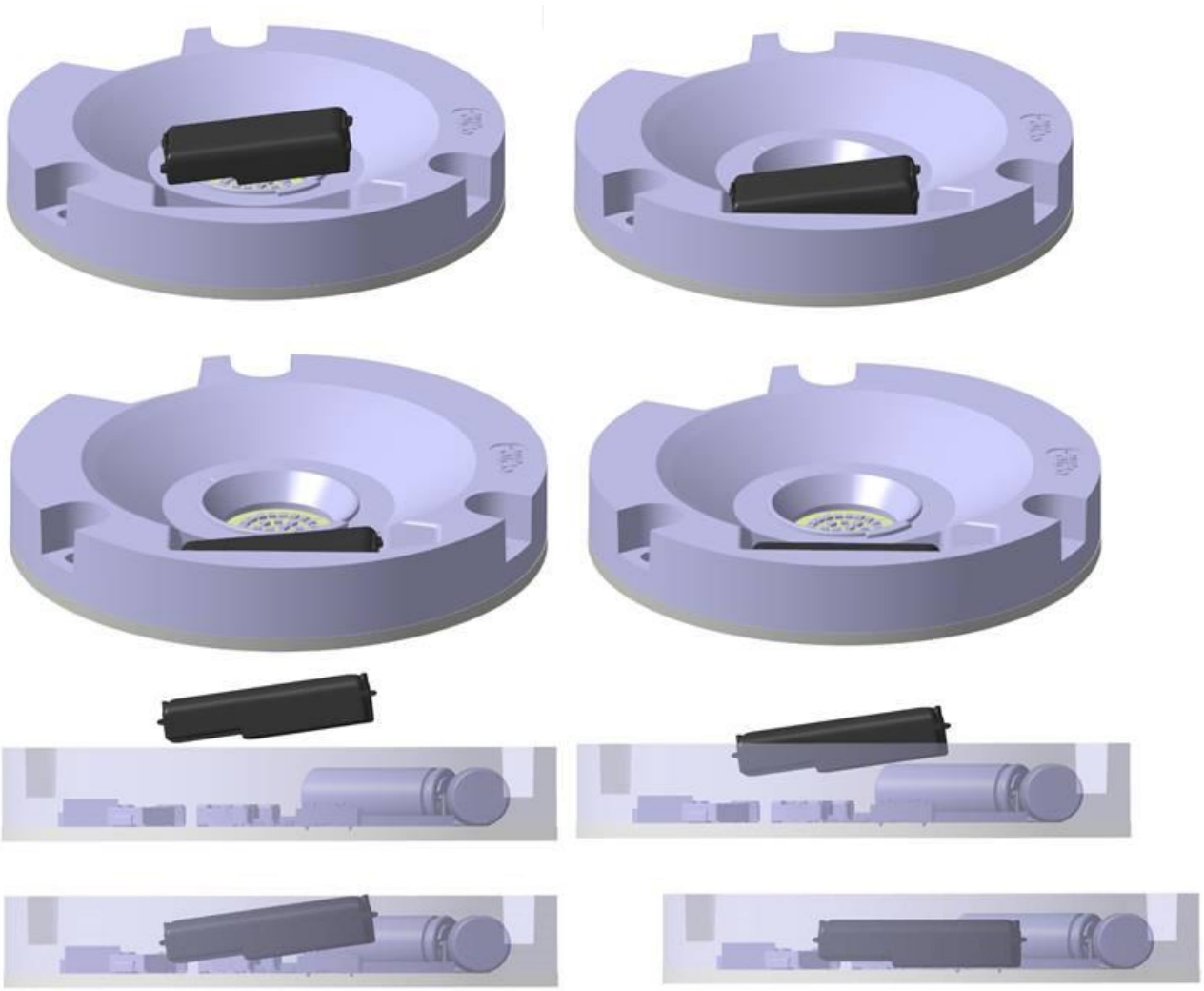


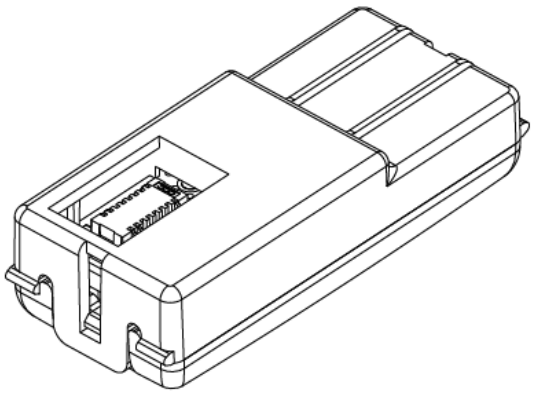
DimIn Switch (Switch-Dim)



LED Module with IoT (DimIn Switch)

Mounting of DimIn

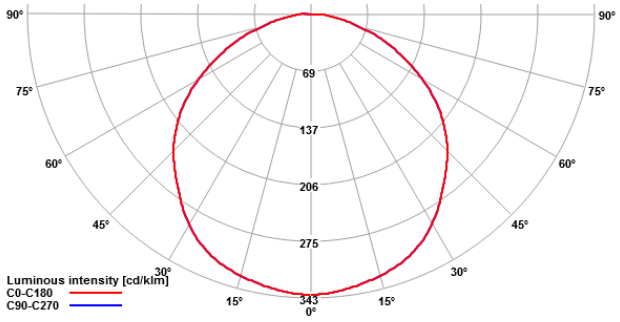




Here on the left, you can see the DimIn unit from below and you can see the connector that is connected to the LED module as well. It is important to insert the front first during assembly, as you can see in the pictures above, then press the rear end and the contact into place. Friction locking between the LED module's safety cover and the DimIn unit's protection locks it in place.

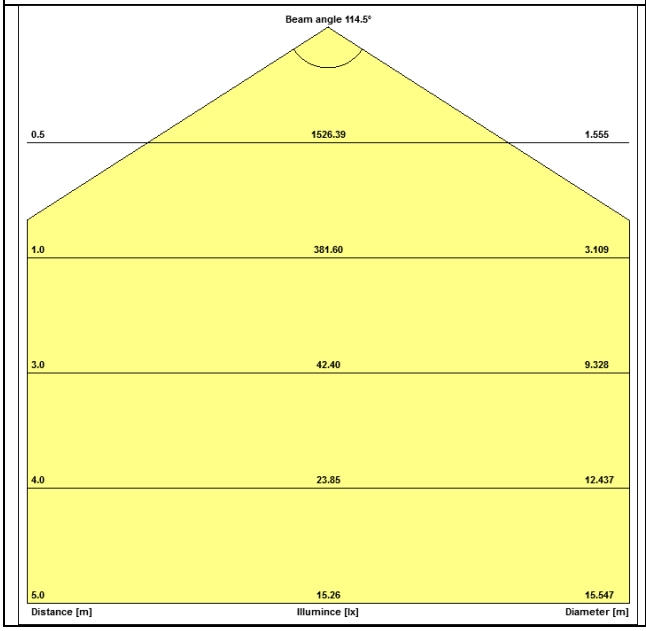
Optical data

Light intensity distribution 20W version

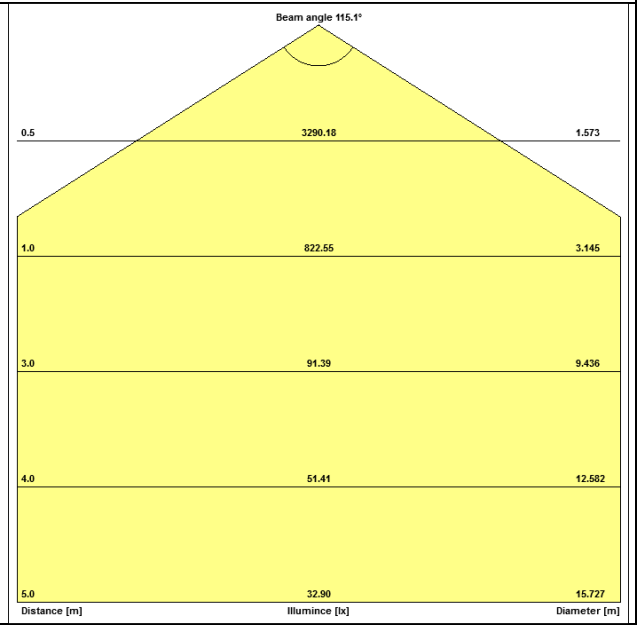


Beam Angle

10W 2700K

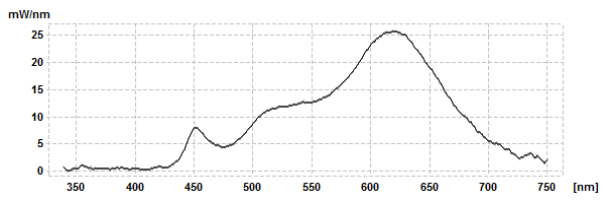


20W 2700K

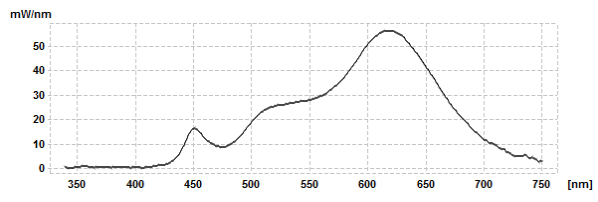


Spectrum

10W 2700K

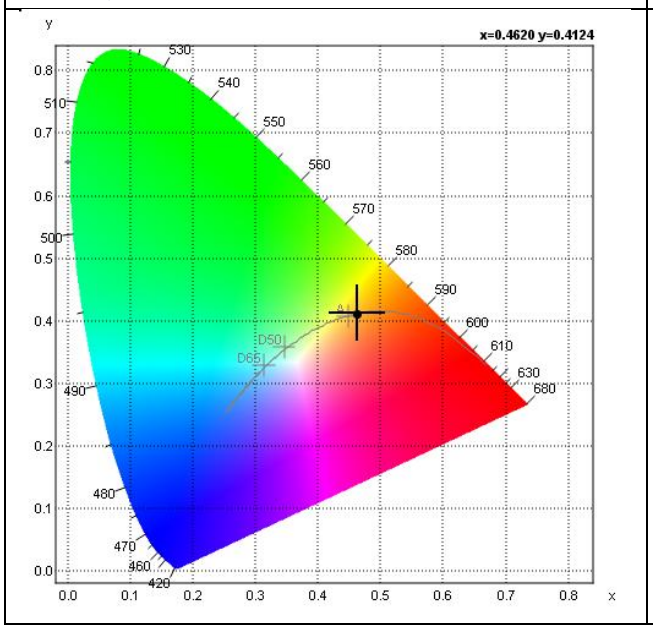


20W 2700K

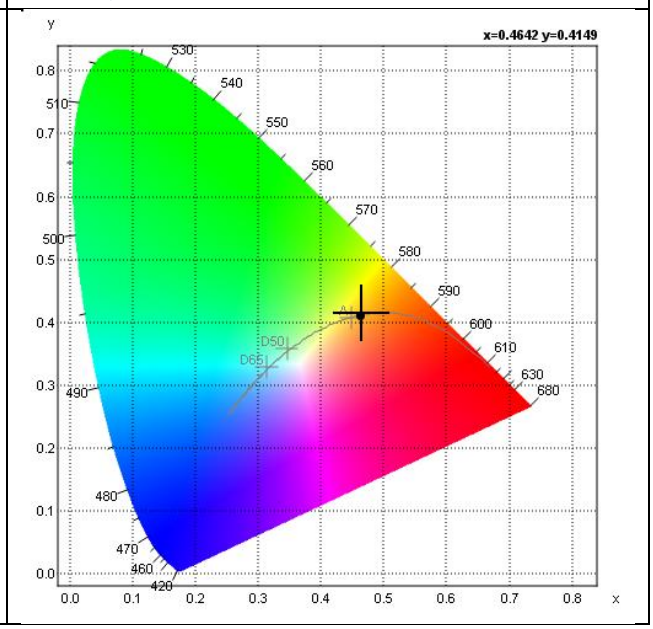


CIE1931

10W 2700K



20W 2700K

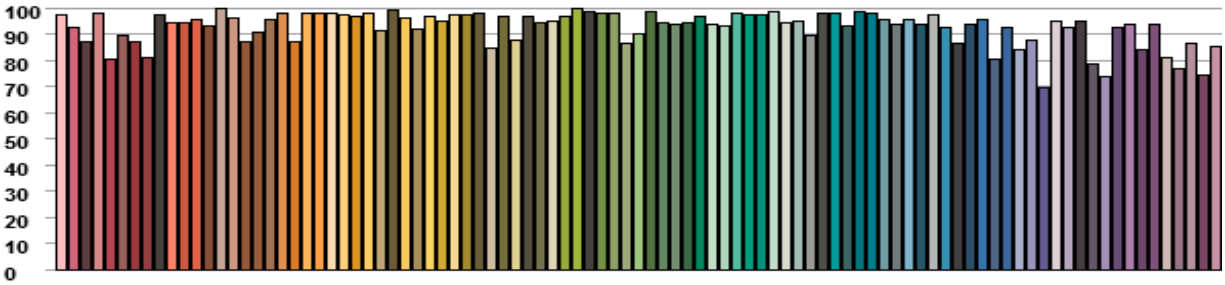


TM-30-15 Calculations

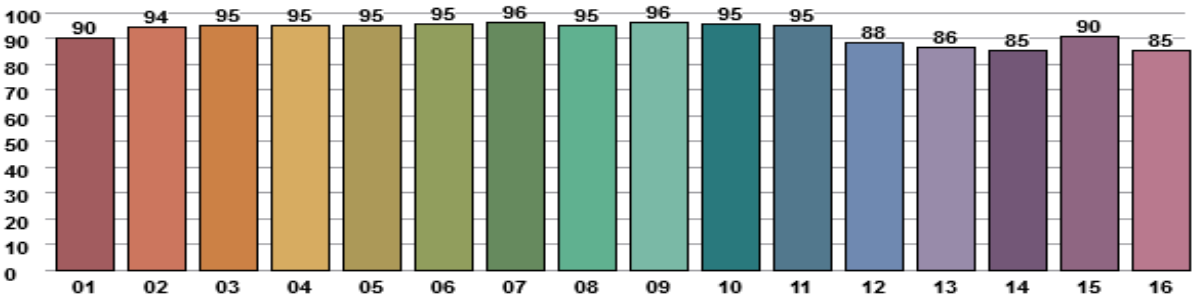
Main parameters

Fi	93
Rg	99
Rfskin	96

Fidelity Index (Rf,j)



Hue Bin Fidelity Index (Rfh,j)



Measurement results including CRI

2700K 10W

CIE 1931 2˚observer	
x	**0.4620**
y	**0.4124**
u'	0.2631
v'	0.5284
L	100.00
a	28.16
b	69.24
X	1235.23
Y	**1102.62**
Z	335.53

Other	
CCT	**2684**
Chromaticity Error	0.001
Color Peak	621.93
Color Peak Value	25.66
Color Dominant	584.1
Radiometric	3.7384
Luminous Efficacy	113.7
Power [W]	9.70
Current [A]	0.047
Voltage [VAC]	230.1
Duv	0.0005

Rendering Indices	
Ra	**94.8**
R1	97.8
R2	99.6
R3	97.2
R4	99.6
R5	99.0
R6	93.9
R7	90.4
R8	80.5
R9	57.9
R10	99.2
R11	94.1
R12	91.4
R13	99.2
R14	99.0

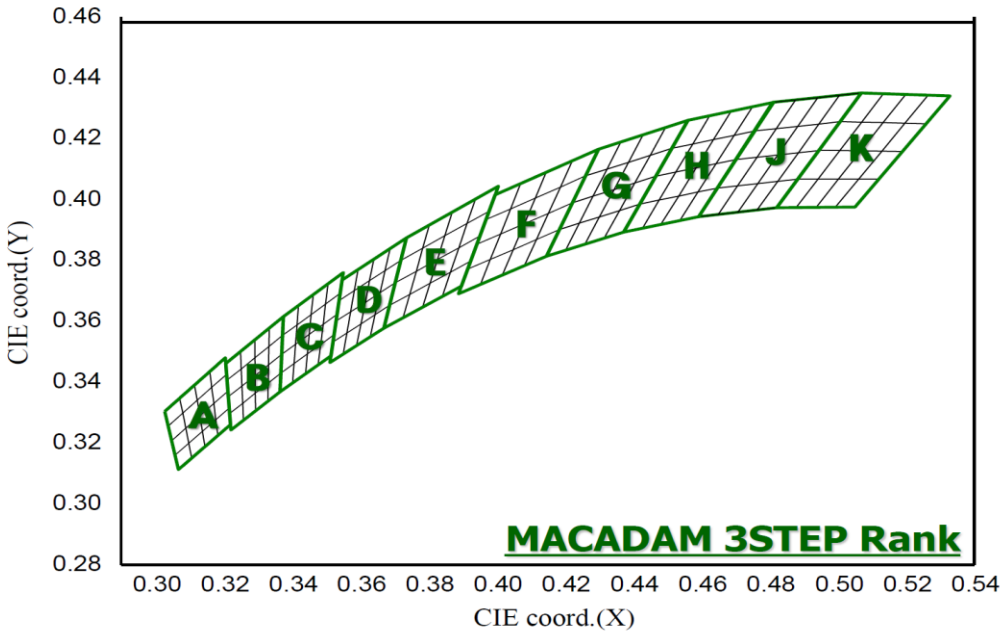
2700K 20W

CIE 1931 2˚observer	
x	**0.4642**
y	**0.4149**
u'	0.2633
v'	0.5296
L	100.00
a	27.92
b	71.13
X	2707.09
Y	**2419.77**
Z	704.85

Other	
CCT	**2673**
Chromaticity Error	0.002
Color Peak	620.26
Color Peak Value	56.19
Color Dominant	584.0
Radiometric	8.0715
Luminous Efficacy	112.9
Power [W]	21.4
Current [A]	0.103
Voltage [VAC]	230.1
Duv	0.0012

Rendering Indices	
Ra	**94.6**
R1	97.0
R2	99.4
R3	97.9
R4	99.3
R5	98.1
R6	95.2
R7	90.5
R8	79.6
R9	55.2
R10	98.6
R11	94.7
R12	92.6
R13	98.3
R14	99.2

CCT structure graphical representation



Short form in diagram	Colour Code	CCT
K	22	2200K
H	27	2700K
G	30	3000K
E	40	4000K

Colour Rendering Index (CRI)

CRI Code	CRI (min) Ra
8	>80
9	>90

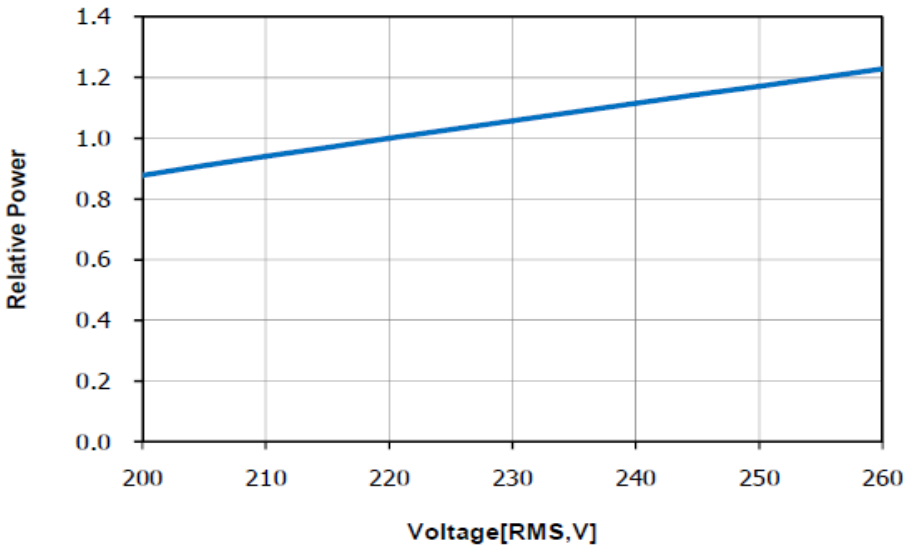
Short form letters for CCT (K)

Colour Code	CCT
22	2200K
27	2700K
30	3000K
40	4000K

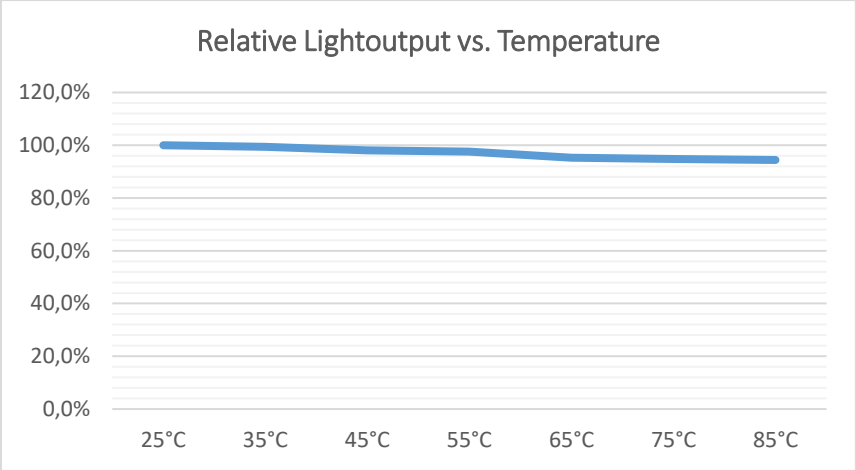
Electro Optical data

Current vs. Voltage

With increasing voltage the light output and the heat increases.



Temperature Characteristics



Consider the thermal properties where the LED module is to be mounted. Temperature is an important factor for lifetime longevity as well as for degradation of luminous flux.

Thermal information

Proper thermal design is crucial for performance and lifetime. The LED module must be mounted on a metal surface that provides sufficient heat dissipation to the surrounding air.

Measurement Control

- Recommended Tc: **65 °C** (for rated lifetime)
- Absolute maximum Tc: **85 °C** (must never be exceeded)

All photometric data are measured with the transparent safety cover at Tc = 25 °C and 65 °C. The Tc point is used to verify that the LED junction temperature remains within the specified range. Always measure Tc after the module has been mounted and stabilized thermally.

Mounting and Heat Conduction

Use the luminaire's metal housing as the primary heatsink. Mount the module flat and firmly against the metal surface using the 0.3 mm silicone pad (standard). Ensure full contact and no air gaps. A large, continuous metal surface (gear tray, housing, ceiling plate, etc.) provides superior thermal performance compared with small, isolated heatsinks.

Thermal Design

Module	Input Power	Required R_{th} (sink–ambient)	Typical Metal Area*
Lilly80 AC 10 W	10 W	≤ 5.3 K/W	≈ 230–250 cm²
Lilly80 AC 20 W	20 W	≤ 2.3 K/W	≈ 540–600 cm²

* Free convection, Ta = 25 °C. Effective metal area thermally connected to the module, all sides exposed to air (not only the module footprint).

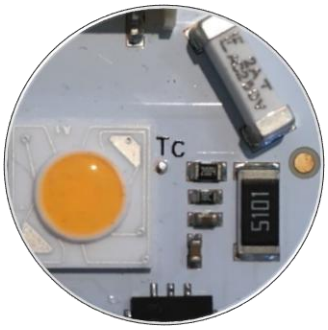
The table below provides indicative thermal requirements for different power levels of the Clara AC IP65 LED module. The values are based on a design case with ambient temperature Ta = 25 °C and target case temperature Tc = 65 °C. To achieve this, the luminaire's metal construction should be used as the primary heatsink.

The specified R_{th} (sink–ambient) represents the maximum allowable thermal resistance between the luminaire surface and the surrounding air. Lower values (larger effective metal area or better ventilation) will result in lower Tc and longer lifetime. At higher ambient temperatures, or if the luminaire is enclosed or mounted close to a ceiling, the available temperature difference (Tc–Ta) decreases. In such cases, reduce the required R_{th} by approximately 25 % for each 10 °C increase in Ta, or verify Tc by measurement during worst-case operation.

Lifetime (Calculated)

Measurement control

At verification, the temperature at the designated Tc measurement points shall be confirmed to remain within the specified limits. Compliance with these limits determines the expected operational lifetime of the module. This verification shall be performed only after proper attachment of the heat sink.



Projected lifetime based on TM-21

The applied power load for the LED module is defined in accordance with the lumen maintenance projection. Lifetime projections are based on LM-80 test data from discrete LEDs operated under the specified thermal conditions at a drive current of 30 mA.

Metric	55 °C	65 °C	75 °C	85 °C
L90B10	78 000 h	66 000 h	58 000 h	51 000 h
L80B10	> 100 000 h	> 100 000 h	> 100 000 h	99 000 h
L70B10	> 100 000 h	> 100 000 h	> 100 000 h	> 100 000 h

Lifetime and Reliability

The projected lifetime values presented are based on TM-21 extrapolation of LM-80 test data for the LEDs used in the module. These figures represent lumen maintenance of the LED packages only.

An LED module, however, consists of several additional components such as PCB substrates, solder joints, driver electronics, optical materials and connectors. The overall service life of the module may therefore be influenced by these elements, depending on the application environment and operating conditions.

Optoga modules are designed and verified to ensure that supporting components are selected and dimensioned to match the LED lifetime at the recommended Tc values. This means that the projected lumen maintenance according to TM-21 is complemented by robust module design, providing customers with reliable long-term performance in real installations.

Thermal performance and lifetime correlation

The lifetime projections above are valid only when the module operates within its specified thermal limits. Since the LED junction temperature is directly dependent on the case temperature (Tc) and the luminaire's heat dissipation capability, proper thermal design is essential to maintain the expected lumen maintenance and reliability values.

Verification of Conformity

The Lilly80 AC IOT module has been evaluated according to the relevant IEC/EN standards for LED modules and lighting equipment.

The safety assessment (IEC/EN 62031:2020) has been carried out at Intertek Semco.

All additional EMC and photobiological tests have been performed at accredited laboratories and test facilities according to the standards listed below.

Test Category	Standard	Test Location	Result
Safety Requirements for LED Modules	IEC/EN 62031:2020	Intertek Semco	Pass
Photobiological Safety	IEC 62471:2008	Accredited laboratory	Pass
Radio Disturbance (Conducted & Radiated)	IEC/EN 55015:2006 + A1:2007 + A2:2009	Accredited EMC facility	Pass
Surge Immunity	IEC 61000-4-5	Accredited EMC facility	Up to 1.5 kV
Fast Transient/Burst	IEC 61000-4-4 (ref. IEC 61547)	Accredited EMC facility	Up to 2 kV
ESD Immunity	IEC 61000-4-2	Accredited EMC facility	8 kV air / 4 kV contact

** Please consult the document ESD standards on Optodrive ED, ID and AC*

EMC Compliance

The Lilly80 AC IOT module has been tested and verified according to the applicable EMC requirements for lighting equipment. The tests cover both emission and immunity to ensure stable and interference-free operation in professional and public installations.

Emissions - Conducted (EN 55015)

Conducted emissions have been measured according to EN 55015 (9 kHz–30 MHz).
All measured points are 7–8 dB below the limit values, ensuring strong margin and compliant performance in mains-connected lighting installations.
(Source: Test Report Lilly80_AC_IOT_3528_PT_V1.4.6.0)

Emissions - Radiated (EN 55032 Class B)

Radiated emissions have been measured at 1 meter according to EN 55032 Class B in both horizontal and vertical polarization.
The module meets Class B limits with consistent margin across the full frequency range (30 MHz–1 GHz), ensuring it does not interfere with radio, multimedia, communication or control equipment.
This extends beyond the requirements of EN 55015 and demonstrates suitability for sensitive electromagnetic environments.

Harmonic Current Emissions (IEC 61000-3-2)

Harmonic current emissions are evaluated separately. The module is designed to comply with Class C lighting equipment limits, ensuring minimal impact on power quality.

Immunity - Burst (IEC 61000-4-4)

Immunity to fast transients (EFT/Burst) has been tested up to 2 kV.
The module shows no permanent degradation and maintains stable light output under burst conditions.
(Reference: Lilly80_AC_IOT_3528_PT_V1.4.6.0)

Immunity – Surge (IEC 61000-4-5)

Surge immunity has been tested to:

- L–N: 1.25 kV
- L/N–PE: 2 kV
  The module passes without loss of function, ensuring robust operation in installations exposed to mains transients such as large buildings, industrial environments and infrastructure systems.

Production Setup

Production in accordance with IPC-6012-B and IPC-A-600G class 2

The LED Module is in accordance to EU Directive 2002/95/EC (ROHS)

The bare PCB is isolation tested with 3000VDC/10mA for 10 seconds

PCB Material Setup

In all questions regarding the bare PCB please use “Material Data sheet Optodrive” as a guideline.

Light fitting routine tests

According to EN/IEC 60598-1 should the routine test be performed as a dielectric strength test or insulation test. Only the insulation test of 500Vdc should be performed according to standard, 1s with min 2MΩ.

No dielectric tests are allowed to be performed on OptoDrive LED Modules.

DIMMERS tested

230VAC

It is important to understand that this is figures tested with standard dimmers and can only be considered as reference information. Please, always perform a test on the application in advance in its actual application. We don't take any blame for the changes, differences and updates towards dimmers and the performance etc. due to this.

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.
- Optodrive LED Modules meet IEC61547:2009 and IEC61000-4-2. We recommend the light fixture manufacturer to take the mentioned standards under consideration.

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 III and TSCA Compliant

All our LED modules meet the Restrictions of Hazardous Substances (RoHS III) and Toxic Substances Control Act (TSCA).

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, the Japan Ministry of Trade and Industry (MITI) and US Environmental Protection Agency under TSCA Section 6(h). All LED module makers providing products to these countries should comply with these restrictions. In order to meet the RoHS III regulation, Optoga is strictly implementing a ban on lead and other hazardous materials in its products according to these mentioned directives. We also manage those required by the Toxic Substances Control Act (TSCA), to reduce exposure to certain Persistent, Bioaccumulative and Toxic (PBT) chemicals.

Design for Environment:

According to the EU-directive (RoHS III) the following substances must not be used in this product

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Chromium VI (Cr^{6+})
- Polybrominated biphenyls PBB
- Polybrominated diphenyl ethers PBDE
- Bis(2-ethylhexyl) phthalate DEPH
- Butyl benzyl phthalate BBP
- Dibutyl phthalate DBP
- Diisobutyl phthalate DIBP

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 developes 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