



ADA60 AC IOT



ADA60 AC IoT

5 and 10W

Round LED-module for spotlights and downlights.

No driver is required fully dimmable with DALI, Casambi and INGY



Key features

ADA60 is an AC LED light engine developed for professional luminaires, with focus on controlled light quality, predictable behaviour and efficient system integration. The integrated driver concept enables direct connection to mains voltage and supports dimming and optional smart lighting functionality.



1. **Direct mains operation**

Designed for connection to 230 VAC without external drivers, supporting simplified luminaire design and installation.

2. **Compatible with professional dimming solutions**

Supports standard phase dimming and can be combined with DimIn for integration with DALI, Casambi or local control interfaces.

3. **Stable light output and colour performance**

Engineered to provide consistent luminous flux and colour characteristics across operating conditions.

4. **Prepared for smart lighting systems**

Modular interface concept enabling integration into connected lighting and control environments.

5. **Designed for regulatory compliance and longevity**

Developed in accordance with applicable EU requirements and intended for long-term use in professional lighting applications.



ADA60 AC IoT

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Object:
Datasheet ADA60 AC IoT
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Introduction

ADA60 is an AC LED module developed for professional luminaires where controlled light output, stable colour performance and defined dimming behaviour are required. The module is designed to support predictable electrical and optical performance under specified operating conditions.

The integrated driver architecture enables direct connection to mains voltage and supports phase-cut dimming as standard. For applications requiring digital or wireless control, ADA60 can be combined with the DimIn system to enable compatibility with established lighting control interfaces.

ADA60 is intended for use in lighting systems where increasing requirements on energy performance, controllability and documentation place higher demands on both the LED module and the surrounding system design. When combined with DimIn Memory functionality, the LED module supports storage and access to product and operational data, enabling energy monitoring, diagnostics and system-level evaluation as part of connected lighting and building management systems.

ADA60 package and integration

ADA60 is a compact, round LED light engine designed for efficient integration in pendant and downlight luminaires. The module features defined connection points to support structured assembly and repeatable installation.

Variants intended for smart lighting applications include an electrically isolated thermal interface, supporting use in Class II luminaires under defined installation conditions.

Light quality

The optical performance of ADA60 is developed with emphasis on colour stability and consistent light output over time. Parameters such as binning, thermal management and ageing behaviour are controlled to support predictable chromaticity and maintained luminous flux throughout the operational lifetime.

Measured colour stability data is provided to support system-level evaluation.

Dimming and control

ADA60 supports controlled dimming using phase-cut dimmers or, when combined with DimIn, digital and wireless control interfaces. Dimming behaviour is designed to minimise visible modulation and maintain stable electrical and optical performance across the operating range.

ADA60 is intended for use in lighting systems where increasing requirements on energy performance, controllability and documentation place higher demands on both the LED module and the surrounding system design.



Short form Characteristics

MODULE CHARACTERISTICS	5W	10W
Power	5 W (±10%)	10 W (±10%)
Nominal Voltage		230VAC
Number of LED's		32
Colour Rendering Index		>Ra90
Colour temperature (CCT)		2700 K / 3000 K / 4000 K
Optics		25-150°
MECHANICAL		
Module dimension		∅ 59.5 mm
Diameter lens		∅ 35mm
Height		11.6 mm
Weight		
Assembly holes		2 x 3.5 mm
Wire connector		Push in
ELECTRICAL		
Input voltage range	220–240 VAC (absolute max. 264 VAC)	
Dimmable	Yes (phase-cut as standard; DALI, Casambi and other interfaces DimIn module)	
Power factor	> 0.95	
Total harmonic distortion	< 15%	
Peak inrush current	TBD	
Surge protection	2kV	
Burst protection	2kV	
Over temp. protection	150 °C (internal protection)	
Energy class	2700K	G
	3000K	G
	4000K	G
PHOTOMETRICAL		
Luminous flux (typ.)	410-450 lm	820-900 lm
Luminous efficacy (typ.)	85lm/W	85lm/W
SDCM (Mac Adam)	3	
Flicker percent	3%	3%
Flicker index	0.0275	0.0275
SVM	0.3	0.3
PstLM	0.3	0.3
ENVIRONMENTAL		
Temperature range	-40°C to 85°C (Absolute maximum temp Tc 85°C)	
Relative Humidity	10-75%	
Ambient air pressure	500-1060 HPa	
LIFETIME		
Life length L70B10*	Lifetime according to TM-21 extrapolation, see Lifetime section	

*Specifications are valid for >Ra95.



Article number structure

ADA60 AC.P.230.32.9yy-OH.IOT

AC	AC= 230VAC, ED=External Driver required, ID=Internal Driver
P	Power (Watt) 5 or 10
V	Voltage: 230VAC
N	Amount of LEDs
8	CRI: 8=Ra>80, 9=Ra>90
YY	CCT: 27 =2700K, 30 =3000K, 40 =4000K
OH	Code: Optical Holder
IoT	IoT interface, Flickerfree (below 10%)

Article name and versions

ADA LED Engine Article description

ARTICLE NAME	POWER	CURRENT	CRI	CCT	LENS
ADA60 AC.5.230.32.927-OH.IOT	5	230	90	2700	Optic Holder
ADA60 AC.5.230.32.930-OH.IOT	5	230	90	3000	Optic Holder
ADA60.AC.5.230.32.840-OH.IOT	5	230	90	4000	Optic Holder
ADA60 AC.10.230.32.927-OH.IOT	10	230	90	2700	Optic Holder
ADA60 AC.10.230.32.930-OH.IOT	10	230	90	3000	Optic Holder
ADA60 AC.10.230.32.940-OH.IOT	10	230	90	4000	Optic Holder

Optics for ADA LED engine

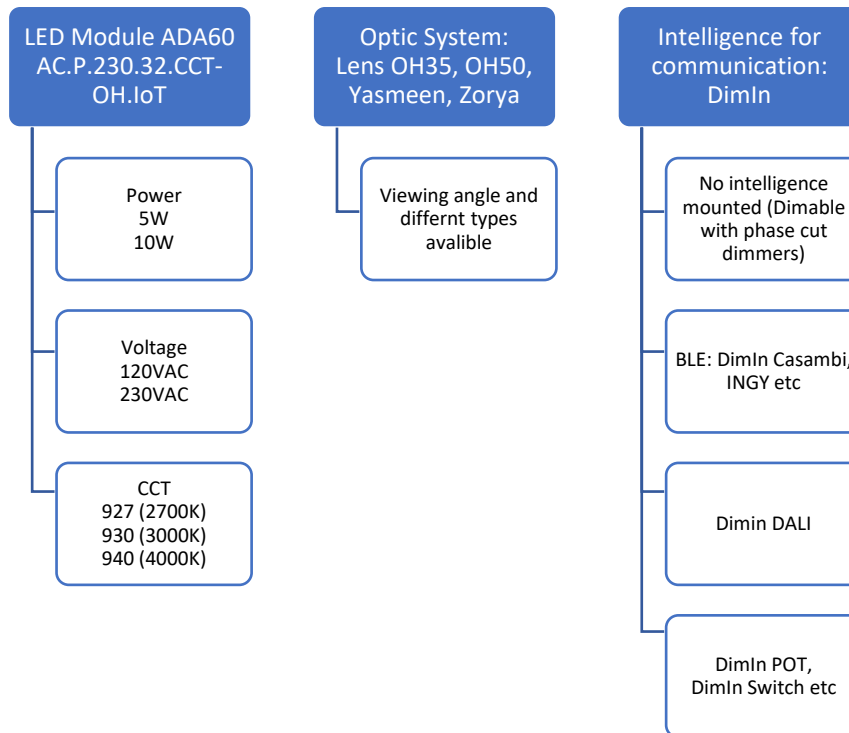
ARTICLE NAME	BEAM ANGLE	LUX Value @ 1 meter (10W)
Lens 35/S	25°	
Lens 35/M	30°	
Lens 35/W	31°	
Lens 35/WW	58°	
Lens Zorya	150°	
Lens 50/S		
Lens 50/M		
Lens 50/W		
Lens 50/WW		

The optics are to be ordered separately



Ordering and Packaging information

Select the LED module with required power and CCT, then choose the optical solution, and finally the IoT control option (DimIn). Each part is ordered separately to allow full flexibility for the final luminaire design.

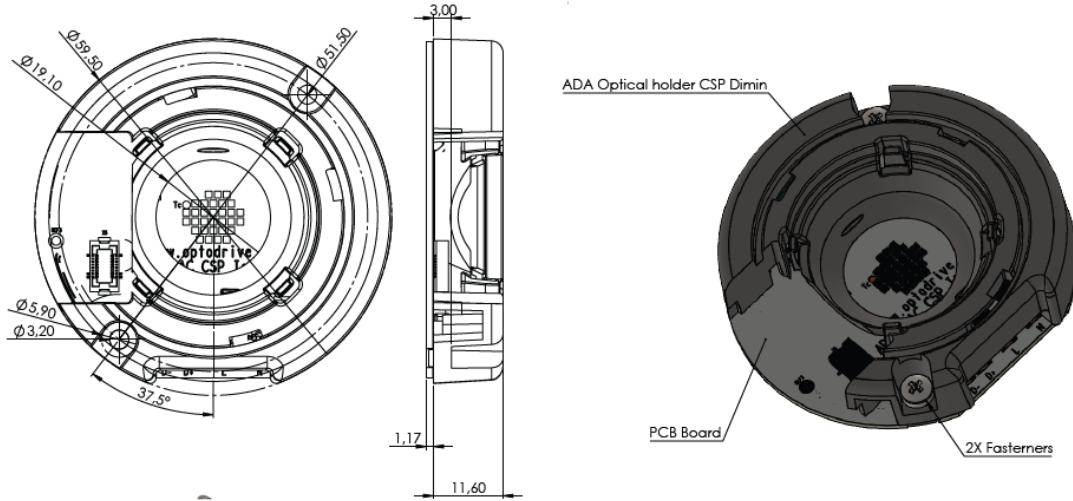


Packaging information

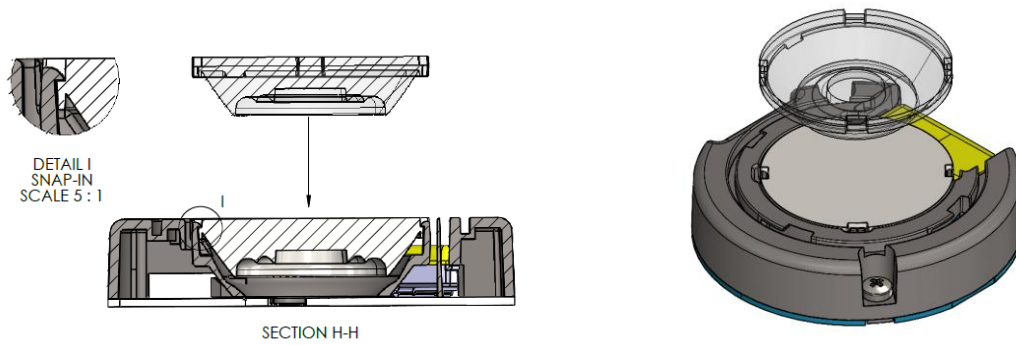
Ada60 AC						Lens 35/xx					
Description	Qty (pcs)	Dimension (cm)			GW (kg)	Description	Qty (pcs)	Dimension (cm)			GW (kg)
		Length	Width	Height				Length	Width	Height	
Inner Box	24	35,6	22,7	9,6	1,5	Inner Box	108	30	30	23	TBD
Outer Box	192	46,5	37,5	36,6	13,0	Outer Box	216	62	32	25	TBD
DimIn						Potentiometer					
Description	Qty (pcs)	Dimension (cm)			GW (kg)	Description	Qty (pcs)	Dimension (cm)			GW (kg)
		Length	Width	Height				Length	Width	Height	
Inner Box	72	35,6	22,7	9,6		Inner Box	TBD	35,6	22,7	9,6	
Outer Box	2304	46,5	37,5	39,6	TBD	Outer Box	TBD	46,5	37,5	39,6	TBD

Dimensions

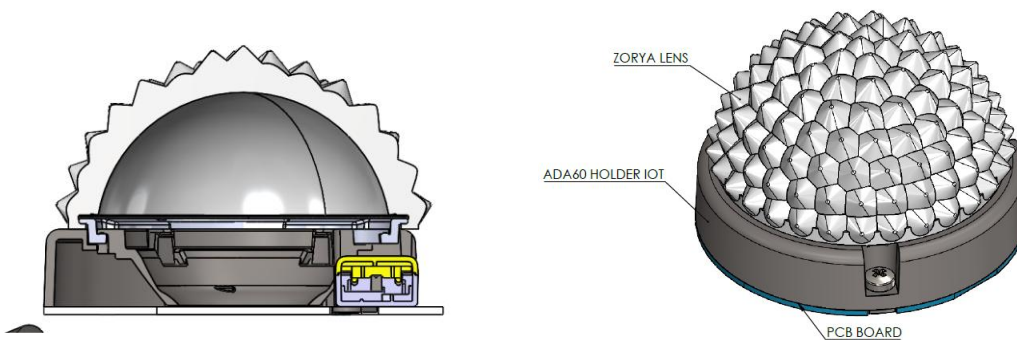
LED-module



Lens for Optical Holder Lens 35mm



Lens Zorya (Twist-N-Lock)



Mounting instructions

The LED module shall be securely mounted to an appropriate heat sink using screws before any electrical connection is made.

Never connect or disconnect the LED module while the power supply is switched on.

Proper thermal contact must be ensured to maintain specified operating conditions.

Mounting

Mount the LED module to a suitable heat sink using screws. Ensure flat contact between the module and the mounting surface.



Wiring

LED modules with IoT / DimIn interface are equipped with terminal blocks marked:

- **L** – Phase
- **N** – Neutral
- **D+ / D-** – Dimming and control interface

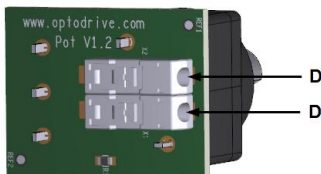
Electrical installation shall be carried out in accordance with applicable local electrical codes..

DimIn

Additional functionality such as digital or local dimming control requires installation of a DimIn module in the IoT interface of the LED module.

The DimIn module is mechanically mounted into the designated interface on the LED module.

Potentiometer card



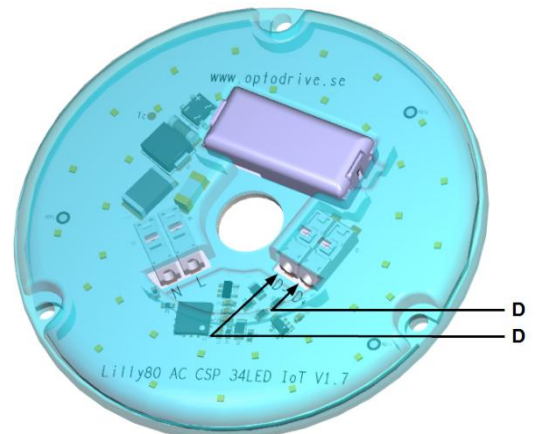
The potentiometer card is used together with the DimIn Pot module.

The dimming direction depends on the connection of **D+** and **D-**.

Wire Connections (DALI or other)

Connect control cables from a DALI control unit or other compatible master device (not supplied by Optoga), or from a DimIn Pot module, to terminals **D+** and **D-** on the LED module.

For DALI control, polarity is not relevant





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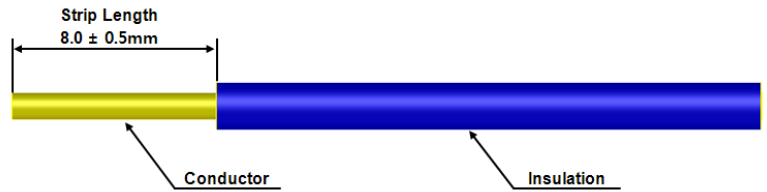
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Connector

Type Push In type

Wire (Recommended)

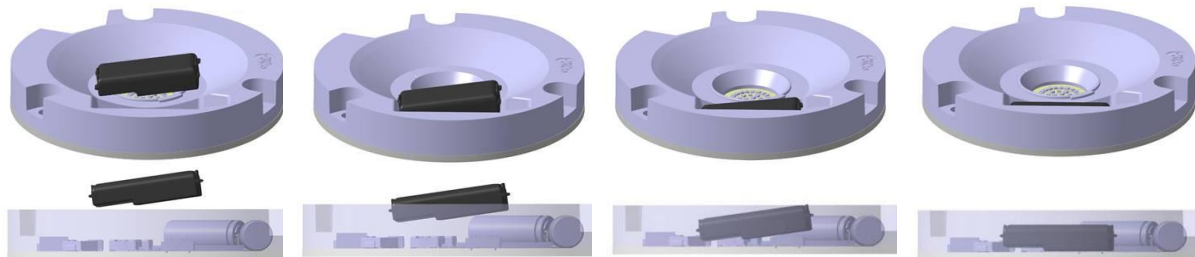
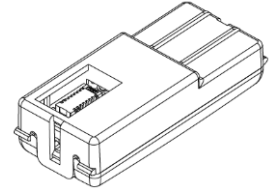
Type of wire	AWG	mm ²
Stranded	22-20	0.32-0.5mm ²
Solid	24-18	0.51-1.02Ø (0.2-0.8mm ²)
Insulation diameter	Max 2.1 mm	



Mounting of DimIn

The DimIn module is designed for direct plug-in connection to the LED module via a standardized interface. No additional brackets or adapters are required.

Installation of DimIn does not affect the mechanical footprint of the LED module and does not require changes to the luminaire design. Optical performance and light output of the LED module remain unchanged.



Integrated Power & IoT-Ready

In IoT versions, the AC driver is fully integrated into the LED module, enabling direct connection to mains voltage without the need for an external driver.

The LED module features an integrated interface for attachment of DimIn or other functional modules. When no module is installed, the LED module operates in a standard dimmable mode.

Functionality with DimIn installed

When a DimIn module is installed, smart control functionality is enabled. Depending on the DimIn variant, this includes support for digital or wireless control interfaces.

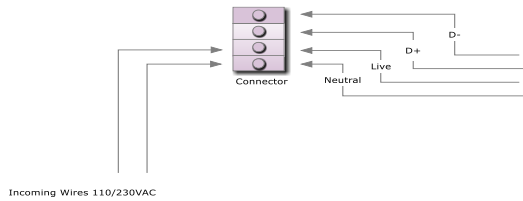
Measured performance supports low visible modulation and flicker-controlled operation across the dimming range. Compliance with applicable EU requirements, including Ecodesign-related modulation limits, is maintained.

Installation flexibility

DimIn modules may be installed during luminaire production or added at a later stage. This allows luminaire manufacturers to offer both standard and smart-enabled versions of the same luminaire platform and supports retrofit upgrades without changes to mains wiring.

Wiring for different DimIn versions

Casambi



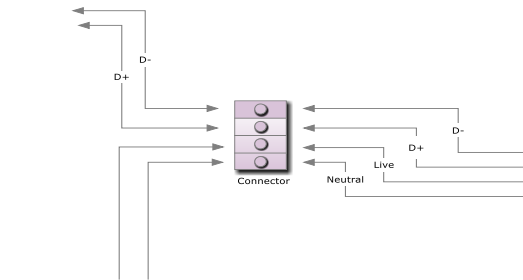
Incoming Wires 110/230VAC

LED Module with IoT (DimIn Casambi)



DALI

DALI BUS Incoming



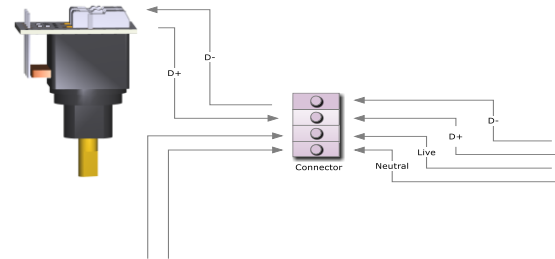
Incoming Wires 110/230VAC

LED Module with IoT (DimIn DALI)



POT / Potentiometer

Potentiometer



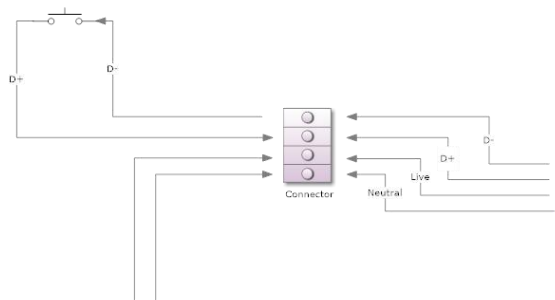
Incoming Wires 110/230VAC

LED Module with IoT (DimIn POT)



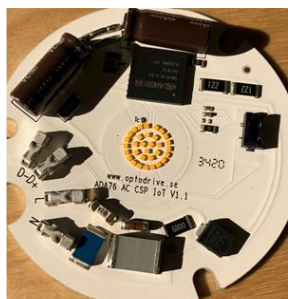
Switch

Momentary Switch (Switch DIM)



Incoming Wires 110/230VAC

LED Module with IoT (DimIn Switch)






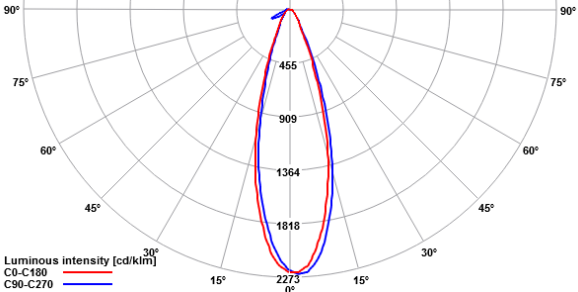
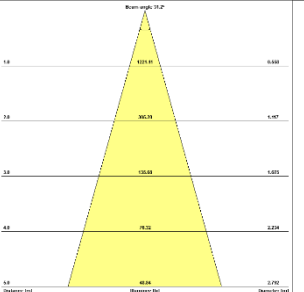
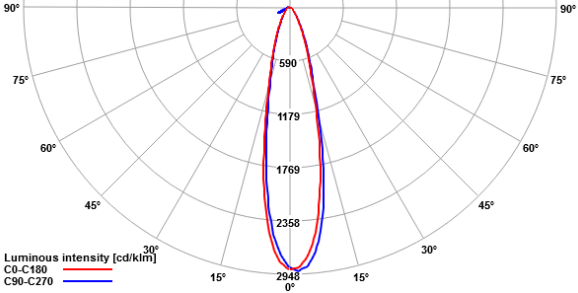
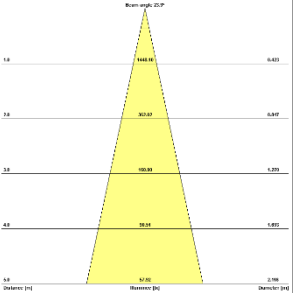
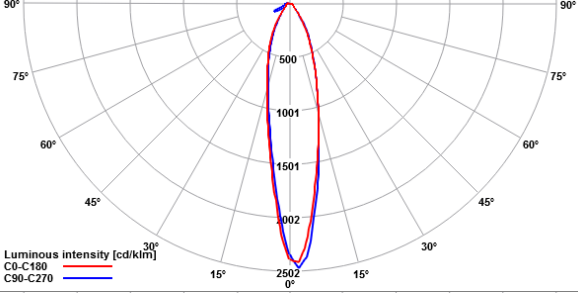
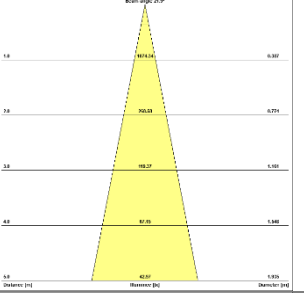
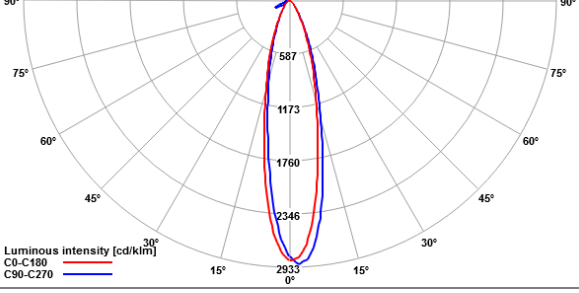
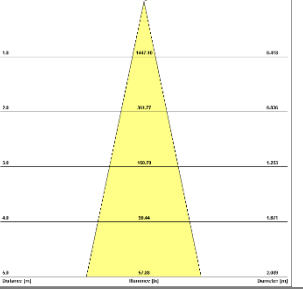
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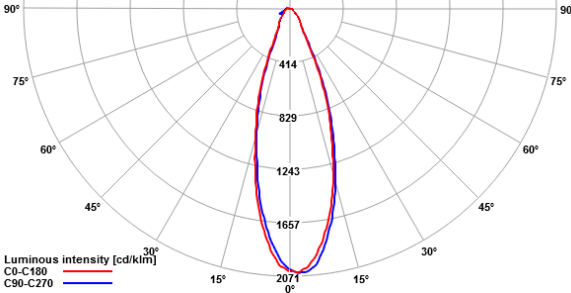
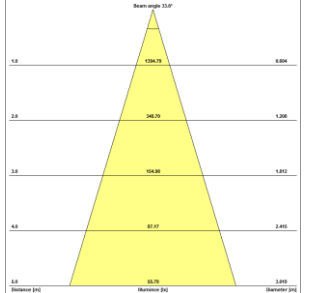
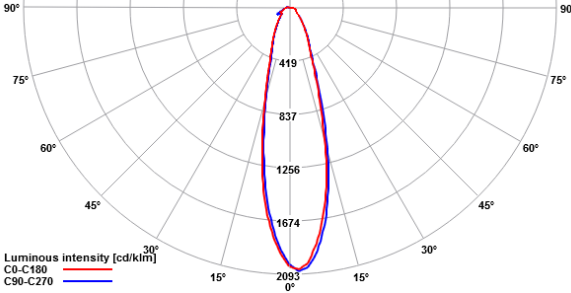
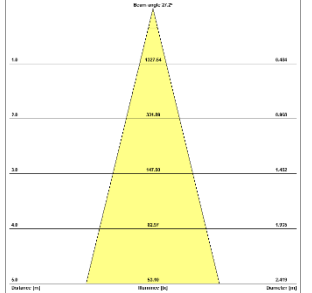
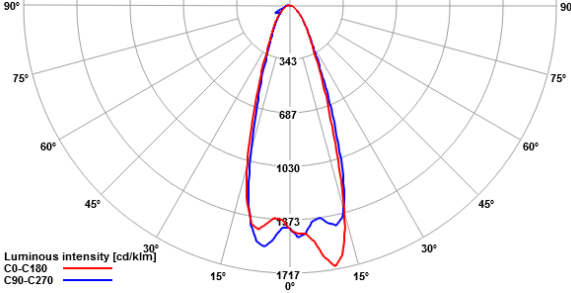
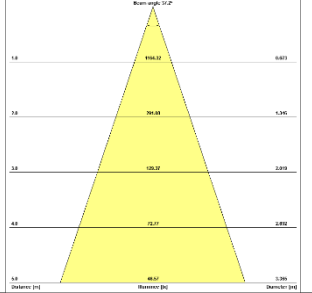
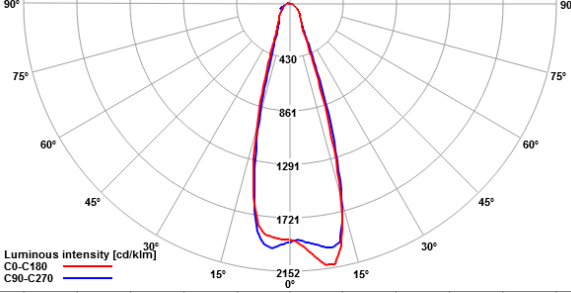
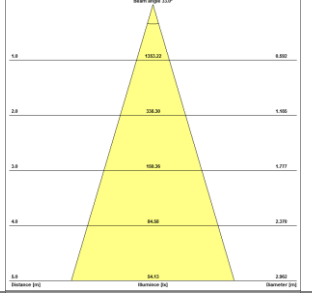
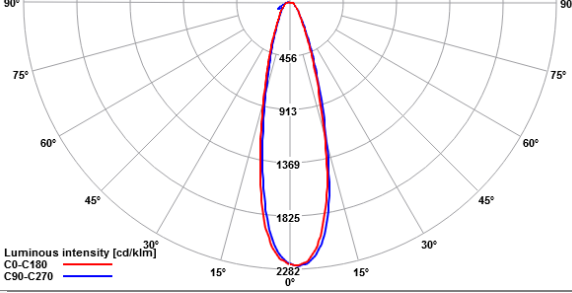
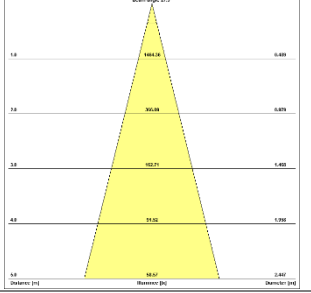
Lens System available

Yasmeen

Version xx-C2	Beam Angle	Light intensity distribution	Beam cone
Yasmeen_WW 	31,2		
Yasmeen_W	23,9		
Yasmeen_S	21,9		
Yasmeen_M	23,6		

Lens material	PMMA
Lens holder material	PC

AMY50

Version xx-C2	Beam Angle	Light intensity distribution	Beam cone
AMY50_WW 	33,6	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	
AMY50_W	27,2	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	
AMY50_S2	37,2	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	
AMY50_S	33,0	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	
AMY50_M	27,5	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	

Lens material	PMMA
Lens holder material	PC



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Version	Beam Angle	Light intensity distribution	Beam cone
xx-C2			
AMY50_WAS			
Lens material		PMMA	
Lens holder material		PC	

Asymmetric beam for wall washing



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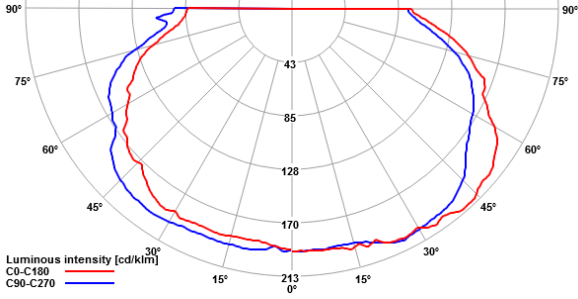
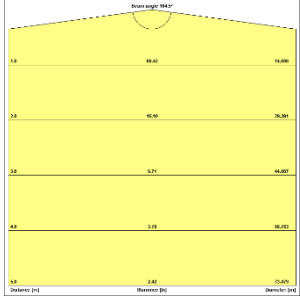
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Zorya

Version xx-C2	Beam Angle	Light intensity distribution	Beam cone
ZORYA-SC-C 105417 	164,5	 <p>Luminous intensity [cd/klm] C0-C180 (red line) C90-C270 (blue line)</p>	

Specially designed to be used inside globes etc LED optic made from silicone with around 340-degree light distribution that mimics a traditional light bulb beam pattern.

Lens material	Silicone
Lens holder material	PC


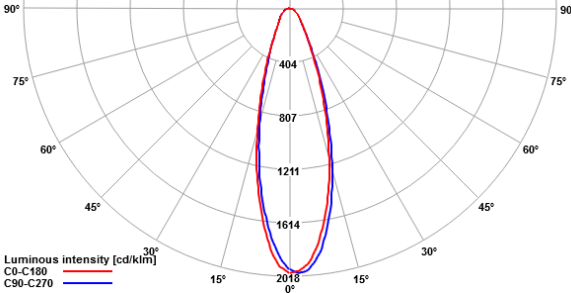
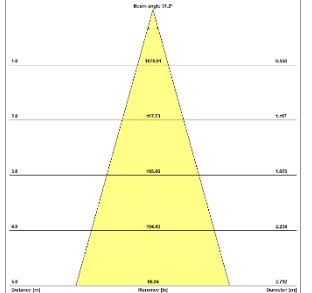
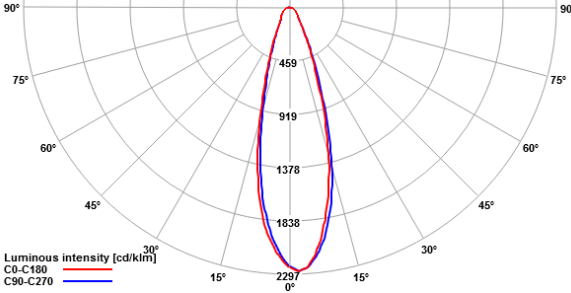
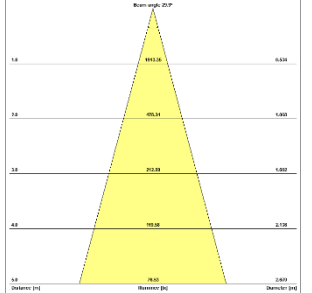
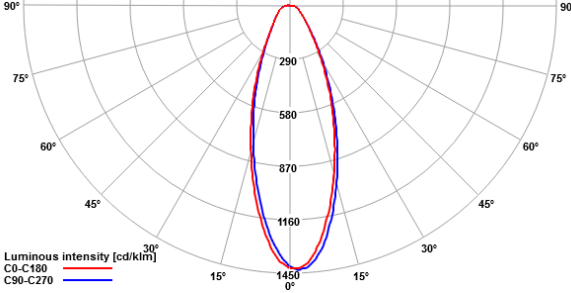
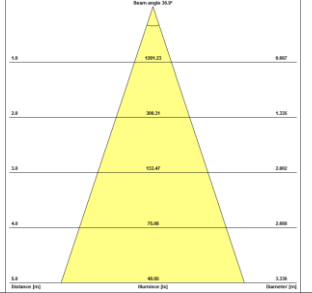
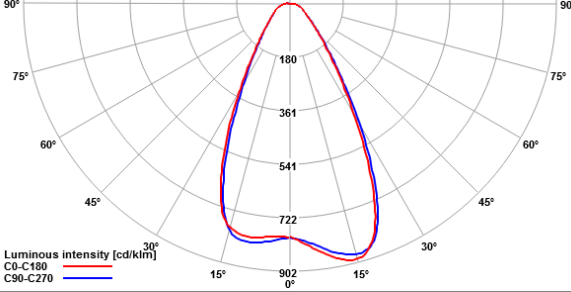
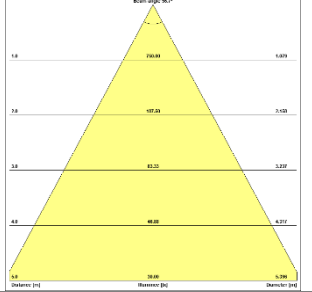


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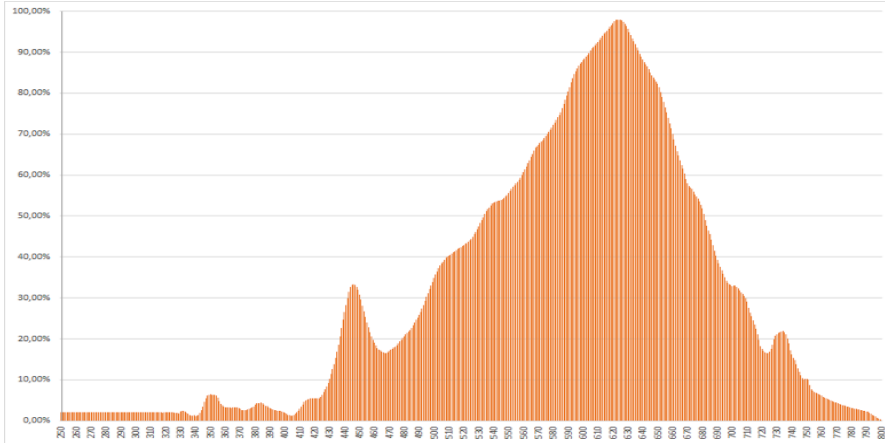
AMY35

Version xx-C2	Beam Angle	Light intensity distribution	Beam cone
AMY35_S 105413 	29,6	 <p>Luminous intensity [cd/klm] C0-C180 C90-C270</p>	
AMY35_M 105414	30,4	 <p>Luminous intensity [cd/klm] C0-C180 C90-C270</p>	
AMY35_W 105415	36,9	 <p>Luminous intensity [cd/klm] C0-C180 C90-C270</p>	
AMY35_WW 105416	57,0	 <p>Luminous intensity [cd/klm] C0-C180 C90-C270</p>	
Lens material		PMMA	



Photometrical

Colour Spectrum 2700K



Colour Rendering Index (CRI) 2700K

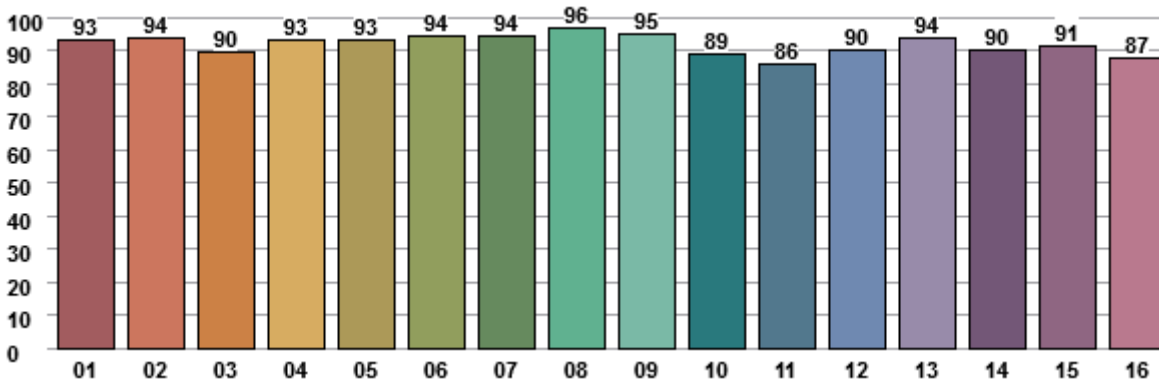
Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
94.0	95.3	95.4	93.2	94.7	94.2	93.1	95.5	90.6	76.2	87.3	94.4	79.9	95.3	95.3

TM-30-15

Main Parameters

Fi	92
Rg	101
Rfskin	96

Hue Bin Fidelity Index (Rfh,j)



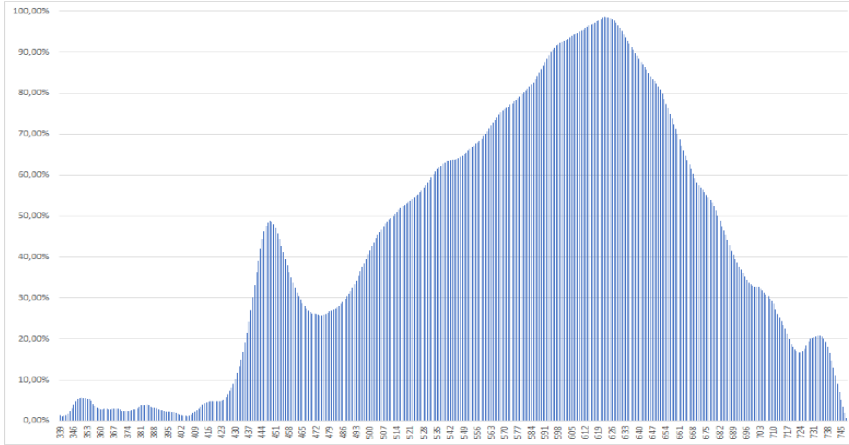


Object:
Datasheet ADA60 AC IoT
(Can be changed and updated without notice)

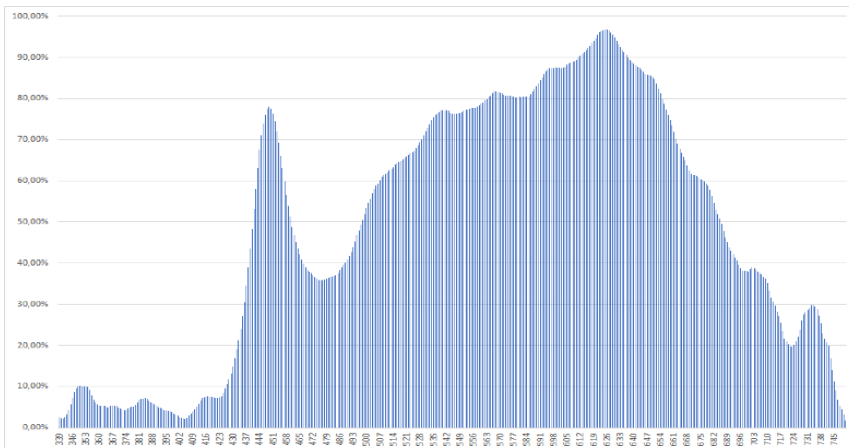
Author:
SL

Date:
2026-01-22

Colour Spectrum 3000K

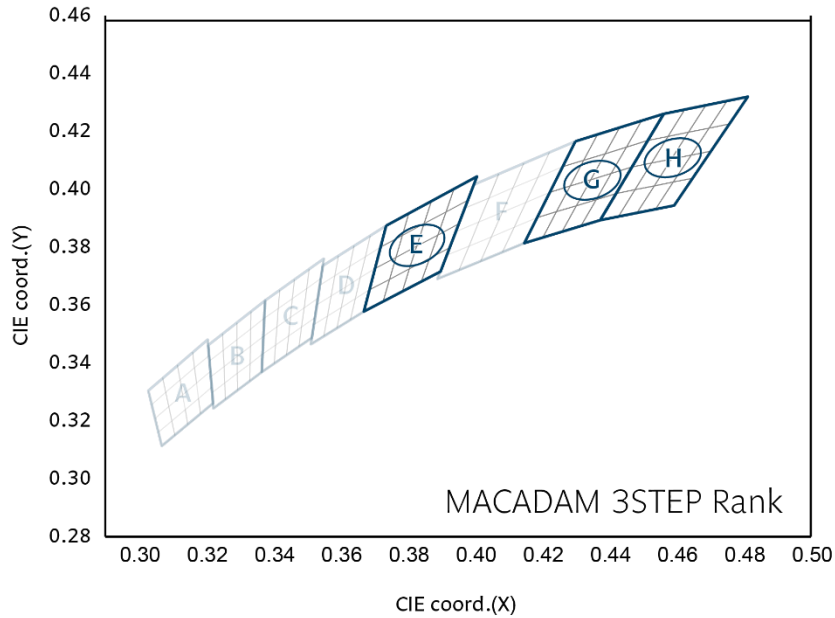


Colour Spectrum 4000K



Binning structure graphical representation

Binning structure graphical representation IEC 1976



* 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

Colour Rendering Index (CRI)

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

Short form letters for CCT (K)

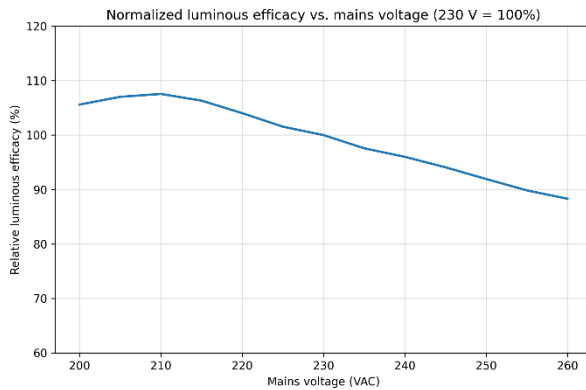
Colour Code	CCT
27	2700K
30	3000K
35	3500K
40	4000K
50	5000K



Electrical Optical Data

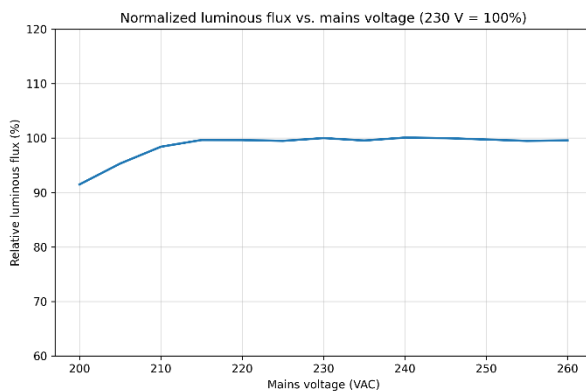
Current vs. Voltage

The following graphs illustrate the electrical and optical behaviour of the ADA60 LED module over mains voltage and temperature.



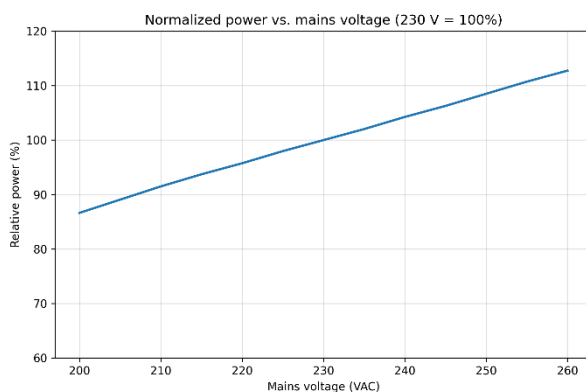
Luminous efficacy vs. mains voltage (25 °C)

Increasing the supply voltage does not increase light output but results in increased internal losses, affecting overall system efficacy.



Normalized luminous flux vs. mains voltage (230 V = 100%)

The graph shows controlled luminous flux across the specified mains voltage range.



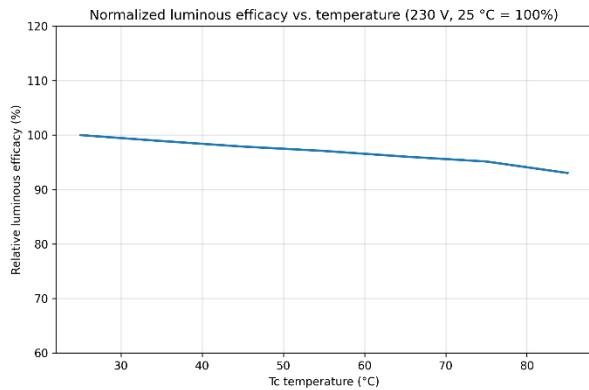
Normalized Power vs. mains voltage (25 °C)

Power consumption increases with supply voltage, illustrating the importance of thermal design at higher mains levels.

Measurements are performed under defined operating conditions to demonstrate predictable system behaviour rather than peak performance. Unmeasured operating points are omitted.

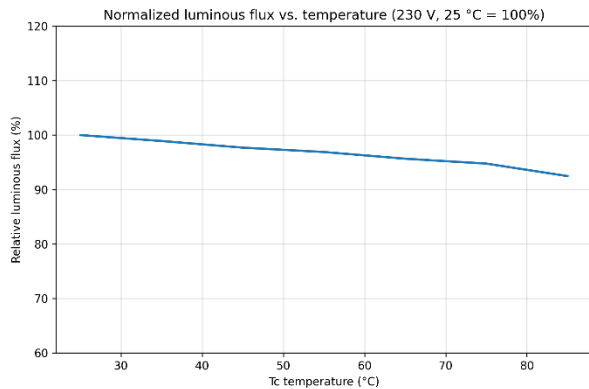
Temperature Characteristics

Thermal behaviour at nominal mains voltage demonstrates controlled power reduction and predictable luminous flux degradation, supporting long service life and robust luminaire design.



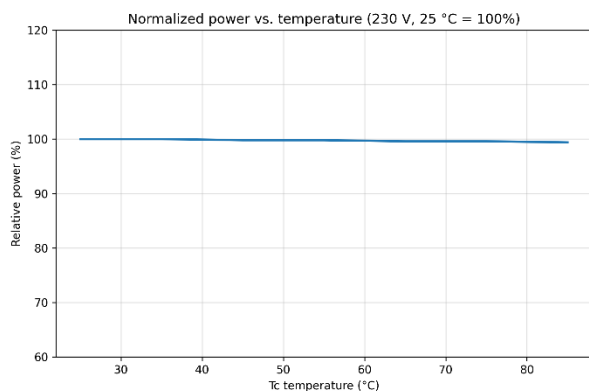
Normalized luminous efficacy vs. temperature (230 V, 25 °C = 100%)

Luminous efficacy normalized to 25 °C illustrates predictable efficiency reduction with increasing Tc temperature.



Normalized luminous flux vs. temperature (230 V, 25 °C = 100%)

Normalized luminous flux shows controlled light output degradation as a function of Tc temperature.

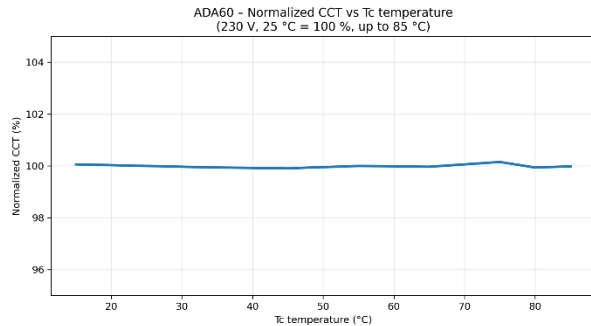


Normalized power vs. temperature (230 V, 25 °C = 100%)

Normalized power remains stable over the temperature range, supporting robust thermal and lifetime design.

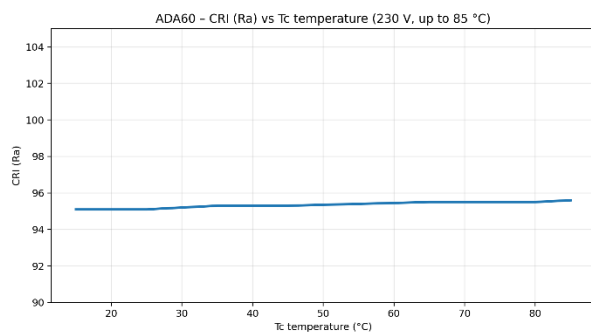
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.

Colour Characteristics



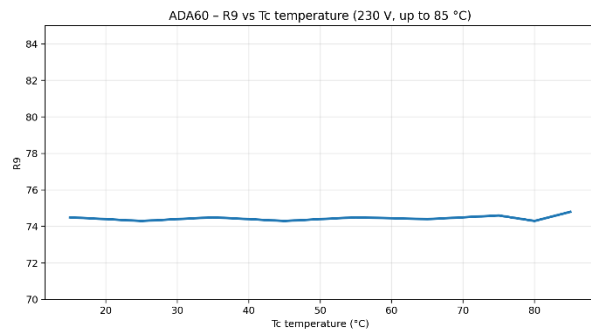
Normalized CCT vs Tc temperature (230 V, 25 °C = 100%)

The normalized correlated colour temperature remains essentially constant across the specified Tc range up to 85 °C. Only minor variations are observed, confirming very stable colour temperature behaviour with increasing Tc.



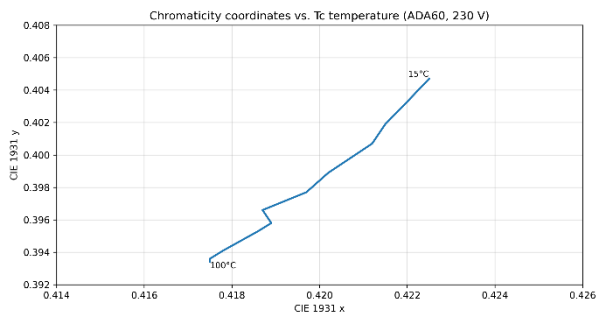
CRI (Ra) vs. temperature (Tc)

CRI as a function of Tc temperature. CRI (Ra) shows no significant dependence on Tc within the specified temperature range up to 85 °C.



R9 vs. temperature (Tc)

R9 as a function of Tc temperature. The R9 value remains stable across the specified Tc range up to 85 °C, with no systematic degradation observed at elevated temperatures.



Chromaticity coordinates vs. Tc temperature (CIE 1931)

Chromaticity coordinates remain within a narrow region over the specified temperature range.

Chromaticity shift ($\Delta u'v'$) remains below 0.005 up to 100 °C, which is in line with LM-80 data for the LED package and confirms very stable colour performance at elevated temperatures.



Digital Product Data & Smart System Integration

Each ADA60 LED module contains internally stored product and performance data in accordance with DALI-2 memory parts 251, 252 and 253.

When operated together with DimIn DALI Memory or DimIn Casambi Memory, this data becomes accessible via the LED module's internal data bus, enabling standardized communication with lighting control systems and building management systems (BMS).

Stored module data includes

- LED module type and identification
- Nominal power and luminous flux
- Declared lifetime (e.g. L80/B50 according to EN 62722-2-1)
- Colour properties (CCT, CRI)

Operational data available via DimIn

- Real-time power (W) and accumulated energy (kWh)
- Operating hours and system start count
- Historical Tc temperature data
- Diagnostic and fault information

This enables luminaire-level energy monitoring, diagnostics and predictive maintenance, forming a foundation for connected smart lighting systems and EPBD-compliant Technical Building Systems (TBS).

ADA60 is therefore prepared for integration into modern BACS/BMS architectures, where each luminaire can act as an individual data point for energy reporting, maintenance planning and system optimization.

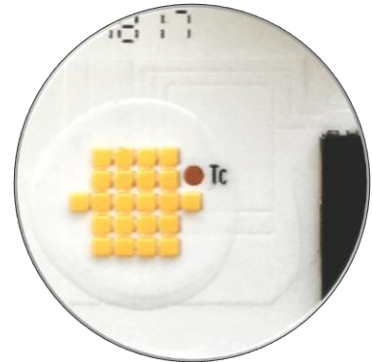
Lifetime (Calculated)

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.

Lifetime Calculation at Tc

The calculated lifetime is based on the maximum recommended temperature at the Tc measurement point. The absolute maximum Tc is 85 °C, and this limit shall not be exceeded. For reliable design margins and extended service life, a recommended Tc of 65 °C should be applied in luminaire design.



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
L90	62 000 h	54 000 h	46 000 h	38 000 h
L80	>100 000 h	>100 000 h	92 000 h	76 000 h
L70	>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.



Verification of Conformity

ADA60 LED modules are tested and verified in accordance with applicable international standards. Compliance testing is performed by accredited test laboratories.

Standards and test references

Safety

- IEC 62031:2020

Photobiological safety

- IEC 62471:2008

Electromagnetic compatibility (EMC)

- IEC 55015:2006 + A1:2007 + A2:2009 (Radio disturbance)
- IEC 61000-3-2:2006 (Harmonic current emissions)
- IEC 61000-3-3:2008 (Voltage fluctuations and flicker)

Immunity

- IEC 61000-4-2 (ESD):
 - 8 kV air discharge
 - 4 kV contact discharge
- IEC 61000-4-5 (Surge): 1.5 kV
- IEC 61547 (Fast transient / burst): 2 kV

For additional information regarding ESD handling, refer to ***ESD standards on Optodrive ED, ID and AC.***

Production and quality

Production is carried out in accordance with IPC-6012B and IPC-A-600G, Class 2.

The LED module complies with Directive 2011/65/EU, as amended by Delegated Directive (EU) 2015/863 (RoHS III).

The bare PCB is dielectric strength tested at 3000 VDC / 10 mA for 10 seconds.

PCB material information

For detailed information regarding the bare PCB material and construction, refer to the document **“Material Data Sheet Optodrive”**.

Light fitting routine tests

According to EN/IEC 60598-1, routine testing of luminaires shall be performed using either an insulation resistance test or a dielectric strength test, depending on the luminaire design. For luminaires incorporating Optoga LED modules, only insulation resistance testing shall be applied. The insulation resistance test shall be performed at 500 VDC for 1 second, with a minimum insulation resistance of 2 MΩ, in accordance with the standard.

Dielectric strength (hipot) testing shall not be performed on Optoga LED modules, as such testing may cause permanent damage to the electronic components.



DIMMERS tested

Brand	Model	Max W	Min W	Min %	Flicker (perceived)	Noise
ION	ID350WMKII	11,1	0,3	3%	No	No
ABB/Busch Jaeger	6523URJGL-214-103	9,6	0,7	7%	No	No
Elko	400GLI	9,8	1,2	12%	No	No
Niko	310-0190X	11,5	0,2	2%	No	No
Vadsbo	VD200	8,9	0,2	2%	No	No
Schneider	SBD315RC	10,6	1,6	15%	Yes	No
SG	820320 LEDIM400	10,5	0,2	2%	No	No
Elko	315 GLE	10,4	1,9	18%	Yes	No
Gira	2262 00 / i01	10,1	1,3	13%	No	No
ABB/Busch Jaeger	2247U	10	1,2	12%	No	No
Vadsbo	VD300	10,7	0,5	3%	Yes	No
Gelia	EF700DC	10,3	3,9	3%	No	No
Schnider	SBD200LED	10,5	2,4	3%	No	No
Berker	2873	10,1	1,6	3%	No	No
Plejd	Dim-01	11,3	0,3	3%	No	No

It is important to understand that these are numbers tested with standard dimmers in a laboratory environment and can only be considered as reference information. Please always perform a test in its actual application. We take no responsibility for changes, differences and updates to dimmers and performance etc. due to this. In the test some of them had low or high level flicker but no problem changing up or down to make the perceived flicker go away. There is always flicker beyond the ability of the eyes to detect such and to minimize it, we recommend using DALI, Casambi, INGY or the like together with our DimIn system which almost completely removes this flicker.



Precautions for use

- The device shall not be used in fluids such as water, oil or organic solvents.
- When cleaning is required, only water and mild soap may be used on the **outside of the lens**. Cleaning inside the LED module is strictly prohibited.
- Product appearance and specifications may be subject to change for improvement without prior notice.
- Prolonged exposure to direct sunlight or UV radiation may cause lens discoloration.
- Opening the LED module is prohibited, as this may compromise EMC performance and allow ingress of dust, grease or other contaminants.
- The LED module shall always be mounted to an appropriate heatsink before electrical connection is made.

Handling in regard to static electricity

Optodrive LED modules contain integrated circuits that may be damaged by electrostatic discharge.

- Handling shall only be performed using appropriate ESD protection equipment.
- The LED module shall not be installed into a luminaire or end product without adequate ESD protection measures in place.
- Optodrive LED modules comply with **IEC 61547:2009** and **IEC 61000-4-2**. Luminaire manufacturers are responsible for ensuring that ESD considerations are addressed at system level.

Storage before use

- Use only test equipment and tools rated for the applicable voltage and current levels.
- Insulated gloves and footwear are recommended when handling electrical products.
- Conductive items such as jewellery shall not be worn during handling or installation.
- Fault conditions, lightning or switching events may cause transient overvoltages exceeding nominal ratings.
- Internal component failures may result in hazardous voltages.
- Stored or residual electrical energy in long conductors may present a safety risk.



ROHS III Compliant

All Optoga LED modules comply with Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment, as amended by Delegated Directive (EU) 2015/863 (commonly referred to as *RoHS III*). This compliance ensures that the products meet the current EU requirements for hazardous substance restrictions in electrical and electronic equipment placed on the EU market.

Design for Environment:

In accordance with Annex II of Directive 2011/65/EU, as amended by Delegated Directive (EU) 2015/863, the following substances are restricted and are not intentionally used in this product:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Chromium VI (Cr⁶⁺)
- Polybrominated biphenyls PBB
- Polybrominated diphenyl ethers PBDE
- Bis(2-ethylhexyl) phthalate DEPH
- Butyl benzyl phthalate BBP
- Dibutyl phthalate DBP
- Diisobutyl phthalate DIBP

Notes

Compliance applies to the LED module as supplied. System-level compliance, including external components and final luminaire integration, is the responsibility of the luminaire manufacturer.

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.



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