

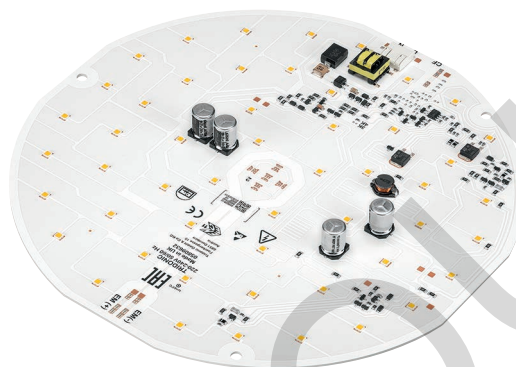


Engine CLE AC G2 220mm 2500lm ADV

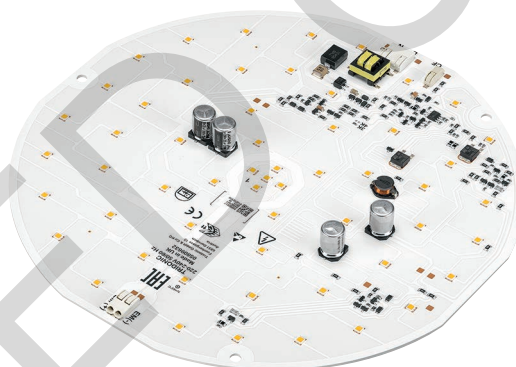
Engine CLE advanced

Product description

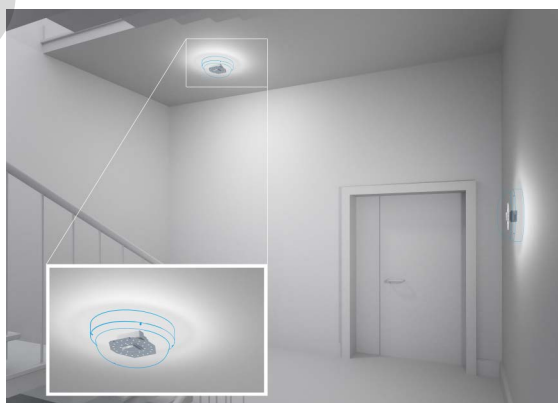
- Module with integrated electronic
- Economic one-piece solution
- Easy Refitting of existing luminaires
- Ideal for ceiling-mounted and wallmounted luminaires
- Enables thin designs of luminaires
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3
- System efficacy of the module up to 117 lm/W
- Integrated separate emergency LED modules with type EM CF, controlled via EM powerLED
- Simple CORRIDOR FUNCTION in combination with any sensor
- Touch cover: Protection against direct touch of active parts
- Life-time 50,000 h
- 5-year guarantee



CLE AC G2 220mm 2500lm ADV



CLE AC G2 220mm 2500lm ADV EM CF



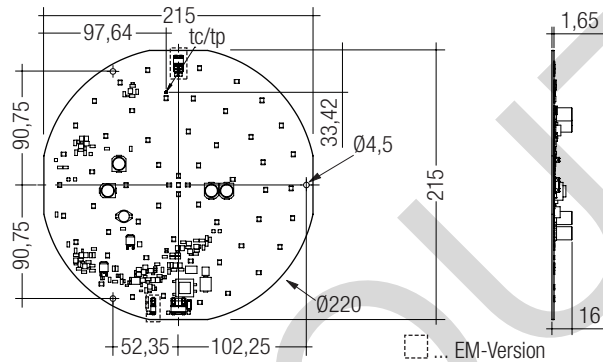


Engine CLE AC G2 220mm 2500lm ADV

Module CLE advanced

Technical data

Rated supply voltage	220 – 240 V
Input voltage, AC	196 – 264 V
Mains frequency	50 / 60 Hz
λ (at 230 V, 50 Hz)	0.97
THD	30 %
Starting time (at 230 V, 50 Hz, full load)	≈ 0.5 s
Beam characteristic	120°
Ambient temperature t_a	-25 ... +45 °C
t_p rated	65 °C
t_c	85 °C
ESD classification	severity level 4
Risk group (IEC 62471:2008)	RG0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
CLE AC G2 220mm 2500lm 830 ADV	89800515	3.000 K	10 pc(s).	0.115 kg
CLE AC G2 220mm 2500lm 840 ADV	89800516	4.000 K	10 pc(s).	0.115 kg
CLE AC G2 220mm 2500lm 830 ADV EM CF	89800517	3.000 K	10 pc(s).	0.119 kg
CLE AC G2 220mm 2500lm 840 ADV EM CF	89800518	4.000 K	10 pc(s).	0.119 kg

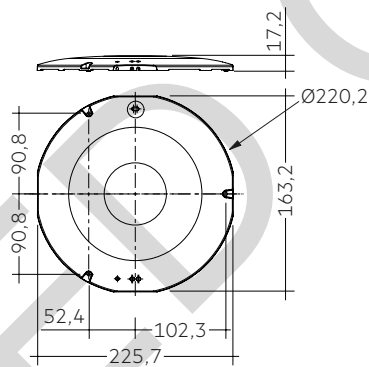
Specific technical data

Type	Photometric code	Typ. luminous flux at $t_p = 25$ °C ^①	Typ. luminous flux at $t_p = 65$ °C ^①	Input current at $t_p = 65$ °C ^①	Input power at $t_p = 65$ °C ^①	Efficacy of the system at $t_p = 65$ °C	Colour rendering index CRI
Normal operation							
CLE AC 220mm 2500lm 830 ADV	830/359	2,450 lm	2,320 lm	95.0 mA	21.90 W	106 lm/W	> 80
CLE AC 220mm 2500lm 840 ADV	840/359	2,700 lm	2,560 lm	95.0 mA	21.90 W	117 lm/W	> 80
CF operation 10 %							
CLE AC 220mm 2500lm 830 ADV EM	830/359	240 lm	230 lm	13.5 mA	2.95 W	78 lm/W	> 80
CLE AC 220mm 2500lm 840 ADV EM	840/359	250 lm	240 lm	13.5 mA	2.95 W	82 lm/W	> 80
Emergency operation at 350 mA							
CLE AC 220mm 2500lm 830 ADV EM	830/359	315 lm	300 lm	350.0 mA	–	–	> 80
CLE AC 220mm 2500lm 840 ADV EM	840/359	330 lm	315 lm	350.0 mA	–	–	> 80

^① Tolerance range for optical and electrical data: ± 10 %.

Product description

- Cover for CLE AC 220mm
- Protection against direct touch of active parts
- Fixation with non-removable fasteners
- High transmission: 92 % for transparent version
- Touch cover made of Polycarbonat



Ordering data

Type	Article number	Colour	Packaging carton	Weight per pc.
ACC COVER 220mm TRANSP	28001048	Transparent	10 pc(s).	0.078 kg

1. Standards

- EN 55015
- EN 61000-3-2
- EN 61547
- EN 62031
- EN 62471

1.1 Photometric code

Key for photometric code, e. g. 830 / 359

1 st digit	2 nd + 3 rd digit	4 th digit	5 th digit	6 th digit
Code	CRI	Colour temperature in Kelvin x 100	MacAdam initial	MacAdam after 25% of the life-time (max.6000h)
7	70 – 79			Luminous flux after 25% of the life-time (max.6000h)
8	80 – 89			Code
9	≥90			Luminous flux
				7 ≥ 70 %
				8 ≥ 80 %
				9 ≥ 90 %

1.2 Energy classification

Type	Energy classification
CLE AC 220mm 2500lm 8x0 ADV (EM)	A+

2. Thermal details

2.1 tc point, ambient temperature and life-time

The temperature at tp reference point is crucial for the light output and life-time of a LED product.

For CLE a tp temperature of 65°C has to be complied in order to achieve an optimum between heat sink requirements, light output and life-time.

Compliance with the maximum permissible reference temperature at the tp point must be checked under operating conditions in a thermally stable state. The maximum value must be determined under worst-case conditions for the relevant application.

The tc and tp temperature of LED modules from Tridonic are measured at the same reference point.

2.2 Storage and humidity

Storage temperature	-30 ... +80 °C
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Operation only in non condensing environment.
Humidity during processing of the module should be between 0 to 70 %.

2.3 Thermal design and heat sink

The rated life of LED products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the CLE will be greatly reduced or the CLE may be destroyed.

2.4 Heat sink values

CLE AC G2 220mm 2500lm

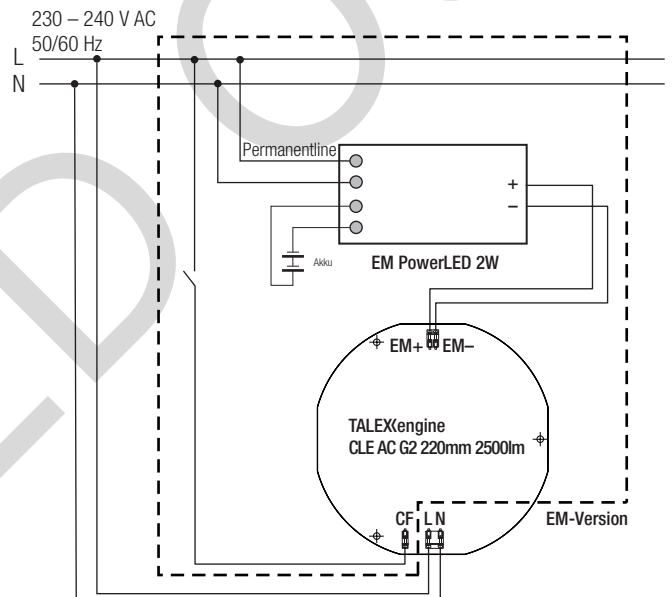
ta	tp	R _{th, hs-a}	Cooling area
25°C	65°C	3.00 K/W	224 cm²
35°C	65°C	2.25 K/W	299 cm²
45°C	65°C	1.50 K/W	449 cm²
55°C	65°C	0.75 K/W	898 cm²

Notes

The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation. Depending on the heat sink a heat conducting paste or heat conducting film might be necessary to keep the specified tp temperature.

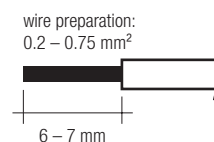
3. Installation / wiring

3.1 Wiring



3.2 Wiring type and cross section

The wiring can be solid or flexible wire with a cross section of 0.2 to 0.75 mm². For the push-wire connection you have to strip the insulation (6-7 mm).



Inserting stranded wires / removing wires by lightly pressing on the push button.

3.3 Mounting instruction



None of the components of the CLE (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5 Nm.

The LED modules are mounted onto a heat sink with 3 M4 screws with a screw head diameter of max. 7 mm per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.



Chemical substance may harm the LED module. Chemical reactions could lead to colour shift, reduced luminous flux or a total failure of the module caused by corrosion of electrical connections.

Materials which are used in LED applications (e.g. sealings, adhesives) must not produce dissolver gas. They must not be condensation curing based, acetate curing based or contain sulfur, chlorine or phthalate.

Avoid corrosive atmosphere during usage and storage.

3.4 Safety instructions



A protection against direct touch (test finger) to the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

4. Life-time

4.1 Life-time, lumen maintenance and failure rate

The light output of an LED Module decreases over the life-time, this is characterized with the L value.

L70 means that the LED module will give 70 % of its initial luminous flux. This value is always related to the number of operation hours and therefore defines the life-time of an LED module.

As the L value is a statistical value and the lumen maintenance may vary over the delivered LED modules.

The B value defines the amount of modules which are below the specific L value, e.g. L70B10 means 10 % of the LED modules are below 70 % of the initial luminous flux, respectively 90 % will be above 70 % of the initial value. In addition the percentage of failed modules (fatal failure) is characterized by the C value.

The F value is the combination of the B and C value. That means for F degradation and complete failures are considered, e.g. L70F10 means 10 % of the LED modules may fail or be below 70 % of the initial luminous flux.

5. Electrical values

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current
Installation Ø	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max} time
CLE AC G2 220mm 2500lm	79	102	126	157	79	102	126	157	1.7 A 100 µs

5.2 Insulation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an insulation test with 500 V_{DC} for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The insulation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

3.5 EOS/ESD safety guidelines



The device / module contains components that are sensitive to electrostatic discharge and may only be installed in the factory and on site if appropriate EOS/ESD protection measures have been taken. No special measures need be taken for devices/modules with enclosed casings (contact with the pc board not possible), just normal installation practice. Please note the requirements set out in the document EOS / ESD guidelines (Guideline_EOS_ESD.pdf) at: <http://www.tridonic.com/esd-protection>

4.2 Lumen maintenance for CLE AC G2 220mm 2500lm

tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
45 °C	12,000 h	29,000 h	24,000 h	50,000 h	37,000 h	50,000 h
50 °C	9,000 h	21,000 h	18,000 h	41,000 h	28,000 h	50,000 h
55 °C	6,000 h	15,000 h	14,000 h	31,000 h	21,000 h	47,000 h
60 °C	5,000 h	11,000 h	10,000 h	23,000 h	16,000 h	36,000 h
65 °C	3,500 h	8,000 h	8,000 h	17,000 h	12,000 h	27,000 h
70 °C	2,500 h	6,000 h	5,000 h	13,000 h	9,000 h	20,000 h
75 °C	2,000 h	4,000 h	3,000 h	10,000 h	7,000 h	16,000 h

The L70 / F50 lumen maintenance value represents the expected life-time of the module with a failure probability of less than 10 %.

5.3 AC operation

Mains voltage:
220–240 V 50/60 Hz
196–264 V 50/60 Hz for safety

6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

The specified colour coordinates are integral measured by a current impulse with typical values of module and a duration of 100 ms.

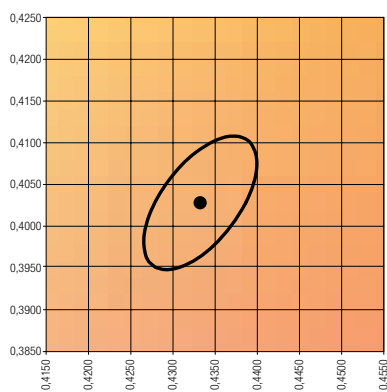
The ambient temperature of the measurement is $t_a = 25^\circ\text{C}$.

The measurement tolerance of the colour coordinates are ± 0.01 .

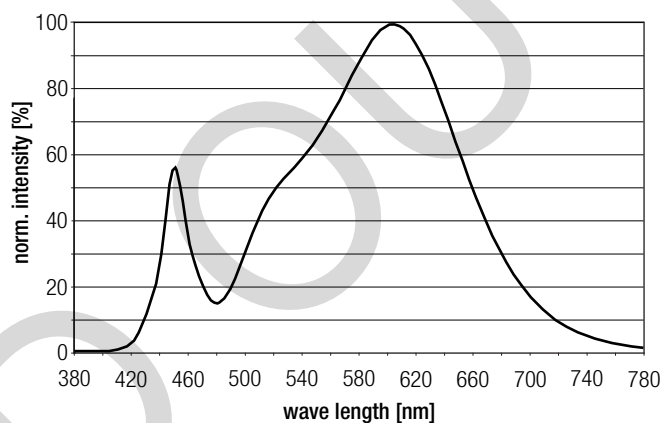
6.2 Colour coordinates for LED module without housing

3,000 K

	x0	y0
Centre	0.4338	0.4030

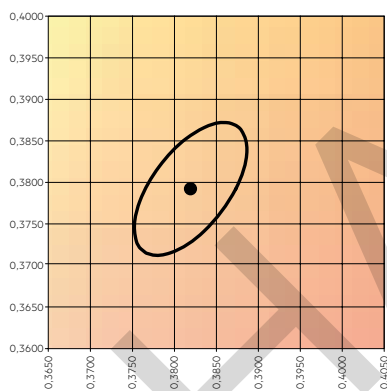


— MacAdam Ellipse: 3SDCM

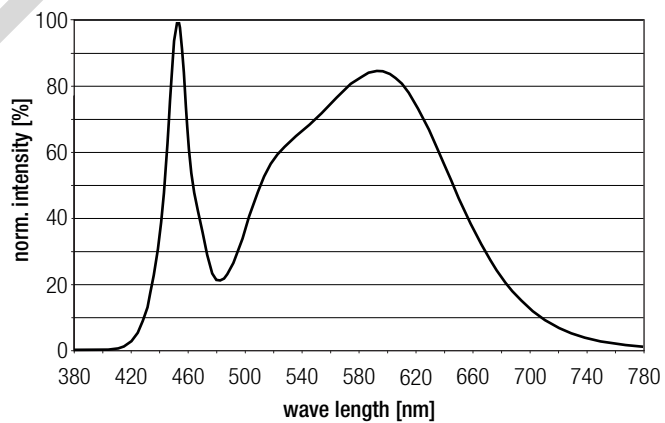


4,000 K

	x0	y0
Mittelpunkt	0.3818	0.3797

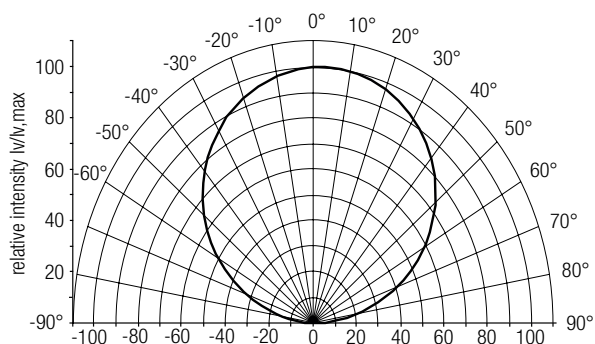


— MacAdam Ellipse: 3SDCM



6.3 Light distribution

The optical design of the CLE product line ensures optimum homogeneity for the light distribution.



The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 3.

To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 5 cm) should be used.

7. Miscellaneous

7.1 Additional information

Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim.