Module CLE Quadrant Lens G1 472–1032mm ADV

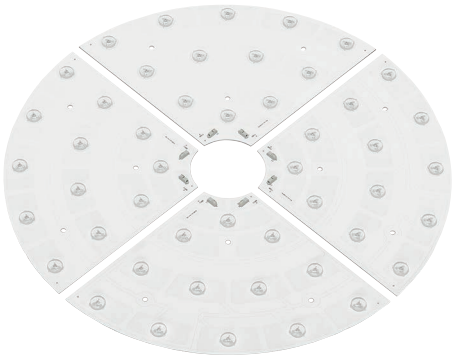
Modules CLE

Product description

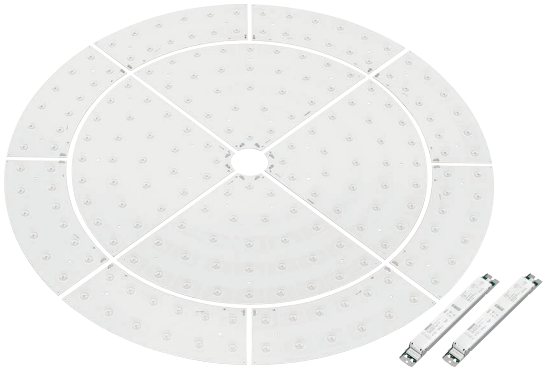
- Ideal for round shaped ceiling and pendant luminaires
- THE solution to realise XXL luminaires
- For uniform illumination of prestige areas or rooms designed to impress
- Designs consisting of 4 quadrants for 600 and 900 mm luminaire diameter and additional 8 ring segments for 1,200 mm luminaire diameter
- Lenses disperse the light of each individual light point which enables a perfect illumination
- Narrow diffuser distances possible
- Small colour tolerance MacAdam 3①
- Colour temperatures 3,000 K and 4,000 K
- Long life-time: 50,000 hours
- 5-year guarantee
- Perfect system solution with PREMIUM lp drivers:
  Ø600 mm: LCA 50W 100-400mA one4all lp PRE (28000655)
  Ø900 mm: LCA 75W 100-400mA one4all lp PRE (28000657)
  Ø1,200 mm: 2 x LCA 75W 100-400mA one4all lp PRE (28000657)

Standards, page 3
Colour temperatures and tolerances, page 6

Quadrant



Module system



Complete system

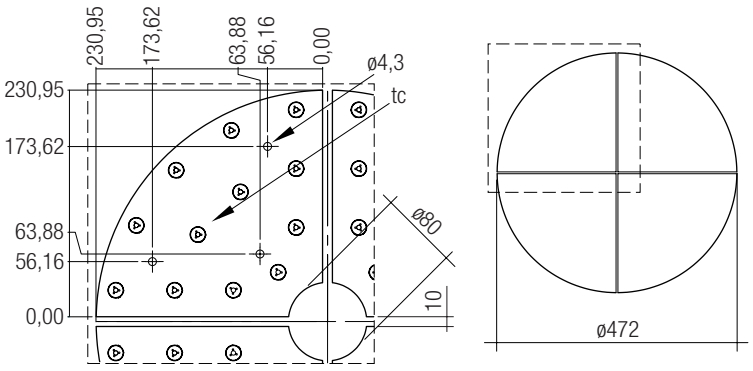
RoHS

Module CLE Quadrant Lens G1 472–1032mm ADV

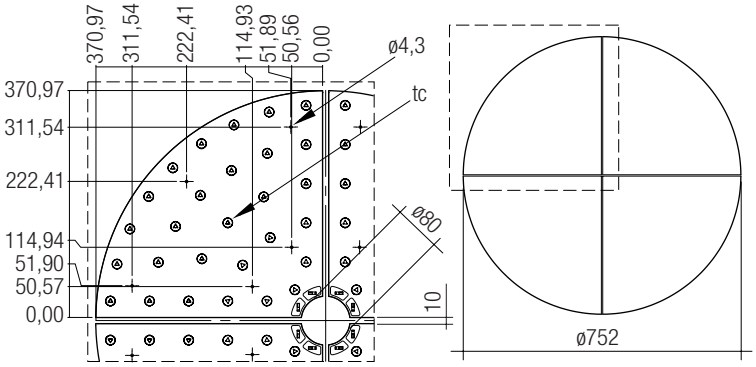
Modules CLE

Technical data

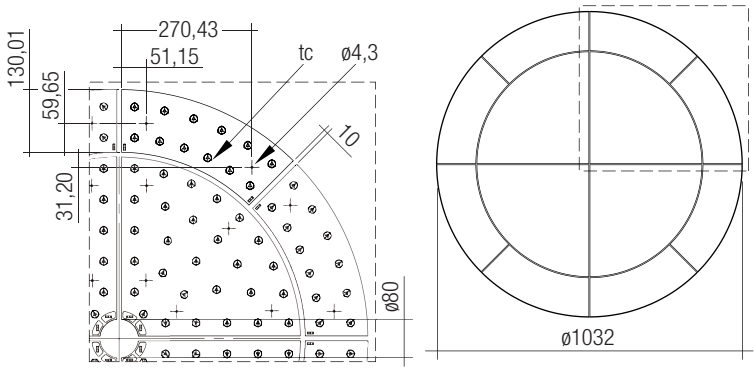
Beam characteristic	Butterfly
Ambient temperature range	-25 … +45 °C
tp rated	45 °C
tc	85 °C
Max. DC forward current	500 mA
Max. permissible LF current ripple	550 mA
Max. permissible peak current	1,600 mA / max. 10 ms
Max. permissible output voltage of LED Driver[2]	420 V
Insulation test voltage	1.84 kV
ESD classification	severity level 4
Risk group (EN 62471:2008)	0
Type of protection	IP00



CLE Quadrant Lens G1 236mm 900lm ADV



CLE Quadrant Lens G1 376mm 2100lm ADV



CLE Quadrant Lens G1 376mm 2100lm ADV + CLE Wing Lens G1 516mm 900lm ADV

Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
CLE Quadrant Lens G1 236mm 900lm 830 ADV	**28001207**	3,000 K	24 pc(s).	0.130 kg
CLE Quadrant Lens G1 236mm 900lm 840 ADV	**28001208**	4,000 K	24 pc(s).	0.130 kg
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	**28001209**	3,000 K	24 pc(s).	0.330 kg
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	**28001210**	4,000 K	24 pc(s).	0.330 kg
CLE Wing Lens G1 516mm 900lm 830 ADV	**28001211**	3,000 K	48 pc(s).	0.140 kg
CLE Wing Lens G1 516mm 900lm 840 ADV	**28001212**	4,000 K	48 pc(s).	0.140 kg

Specific technical data

Type[4]	Photo-metric code	Typ. luminous flux at tp = 25 °C[3]	Typ. luminous flux at tp = 45 °C[3]	Typ. forward current	Min. forward voltage at tp = 45 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 45 °C[3]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 45 °C	Efficacy of the system at tp = 45 °C	Colour rendering index CRI
Operating mode HE at 350 mA											
CLE Quadrant Lens G1 236mm 900lm 830 ADV	830/359	860 lm	840 lm	350 mA	16.4 V	18.4 V	6.2 W	136 lm/W	135 lm/W	120 lm/W	> 80
CLE Quadrant Lens G1 236mm 900lm 840 ADV	840/359	910 lm	890 lm	350 mA	16.4 V	18.4 V	6.2 W	144 lm/W	143 lm/W	127 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	830/359	2,000 lm	1,960 lm	350 mA	38.2 V	42.8 V	14.5 W	136 lm/W	135 lm/W	124 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	840/359	2,130 lm	2,090 lm	350 mA	38.2 V	42.8 V	14.5 W	145 lm/W	144 lm/W	132 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 830 ADV	830/359	860 lm	840 lm	350 mA	16.4 V	18.4 V	6.2 W	136 lm/W	135 lm/W	120 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 840 ADV	840/359	910 lm	890 lm	350 mA	16.4 V	18.4 V	6.2 W	144 lm/W	143 lm/W	127 lm/W	> 80
Operating mode BLO at 370 mA											
CLE Quadrant Lens G1 236mm 900lm 830 ADV	830/359	910 lm	890 lm	370 mA	16.5 V	18.5 V	6.6 W	135 lm/W	135 lm/W	120 lm/W	> 80
CLE Quadrant Lens G1 236mm 900lm 840 ADV	840/359	960 lm	940 lm	370 mA	16.5 V	18.5 V	6.6 W	143 lm/W	142 lm/W	126 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	830/359	2,110 lm	2,060 lm	370 mA	38.4 V	43.1 V	15.4 W	135 lm/W	134 lm/W	123 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	840/359	2,250 lm	2,200 lm	370 mA	38.4 V	43.1 V	15.4 W	143 lm/W	142 lm/W	131 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 830 ADV	830/359	910 lm	890 lm	370 mA	16.5 V	18.5 V	6.6 W	135 lm/W	135 lm/W	120 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 840 ADV	840/359	960 lm	940 lm	370 mA	16.5 V	18.5 V	6.6 W	143 lm/W	142 lm/W	126 lm/W	> 80
Operating mode BLO at 375 mA											
CLE Quadrant Lens G1 236mm 900lm 830 ADV	830/359	920 lm	900 lm	375 mA	16.5 V	18.5 V	6.7 W	135 lm/W	134 lm/W	119 lm/W	> 80
CLE Quadrant Lens G1 236mm 900lm 840 ADV	840/359	970 lm	950 lm	375 mA	16.5 V	18.5 V	6.7 W	142 lm/W	141 lm/W	125 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	830/359	2,135 lm	2,090 lm	375 mA	38.5 V	43.1 V	15.7 W	134 lm/W	133 lm/W	122 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	840/359	2,275 lm	2,230 lm	375 mA	38.5 V	43.1 V	15.7 W	143 lm/W	142 lm/W	131 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 830 ADV	830/359	920 lm	900 lm	375 mA	16.5 V	18.5 V	6.7 W	135 lm/W	134 lm/W	119 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 840 ADV	840/359	970 lm	950 lm	375 mA	16.5 V	18.5 V	6.7 W	142 lm/W	141 lm/W	125 lm/W	> 80
Operating mode HO at 450 mA											
CLE Quadrant Lens G1 236mm 900lm 830 ADV	830/359	1,085 lm	1,060 lm	450 mA	16.8 V	18.8 V	8.2 W	130 lm/W	129 lm/W	114 lm/W	> 80
CLE Quadrant Lens G1 236mm 900lm 840 ADV	840/359	1,150 lm	1,130 lm	450 mA	16.8 V	18.8 V	8.2 W	138 lm/W	137 lm/W	121 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	830/359	2,520 lm	2,470 lm	450 mA	39.2 V	44.0 V	19.2 W	130 lm/W	129 lm/W	125 lm/W	> 80
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	840/359	2,690 lm	2,640 lm	450 mA	39.2 V	44.0 V	19.2 W	138 lm/W	137 lm/W	133 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 830 ADV	830/359	1,085 lm	1,060 lm	450 mA	16.8 V	18.8 V	8.2 W	130 lm/W	129 lm/W	114 lm/W	> 80
CLE Wing Lens G1 516mm 900lm 840 ADV	840/359	1,150 lm	1,130 lm	450 mA	16.8 V	18.8 V	8.2 W	138 lm/W	137 lm/W	121 lm/W	> 80

[1] Integral measurement over the complete module.

[2] If mounted with M4 screws.

[3] Tolerance range for optical and electrical data: ±10 %.

[4] HE ... high efficiency, BLO ... best lamp operation, HO ... high output.

1. Standards

IEC 62031
IEC 62471
IEC 61547
IEC 55015
IEC 61000-4-2

1.1 Photometric code

Key for photometric code, e. g. 830 / 449

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

1.2 Energy classification

Type	Forward current	Energy classification
CLE Quadrant Lens G1 236mm 900lm 8x0 ADV	370 mA	A++
CLE Quadrant Lens G1 376mm 2100lm 830 ADV	370 mA	A+
CLE Quadrant Lens G1 376mm 2100lm 840 ADV	370 mA	A++
CLE Wing Lens G1 516mm 900lm 8x0 ADV	370 mA	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 45 °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 tc 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

Operation only in non condensing environment.
Humidity during processing of the module should be between 30 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.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

CLE from Tridonic are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with a LED Driver which complies with the relevant standards. The use of LED Driver from Tridonic in combination with CLE guarantees the necessary protection for safe and reliable operation.

If a LED Driver other than Tridonic is used, it must provide the following protection:
- Short-circuit protection
- Overload protection
- Overtemperature protection

CLE must be supplied by a constant current LED Driver. Operation with a constant voltage LED Driver will lead to an irreversible damage of the module.

Wrong polarity can damage the CLE.

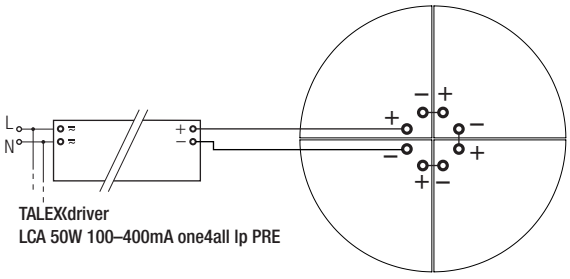
With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. If one module fails, the remaining modules may be overloaded.

CLE can be operated either from SELV LED Drivers or from LED Drivers with LV output voltage.

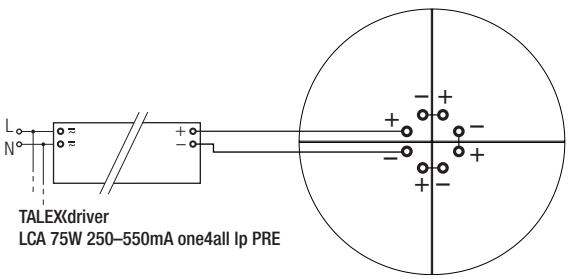
CLE are basic isolated up to 420 V against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led Driver (also against earth) is above 420 V, an additional isolation between LED module and heat sink is required (for example by isolated thermal pads) or by a suitable luminaire construction.
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

3.2 Wiring

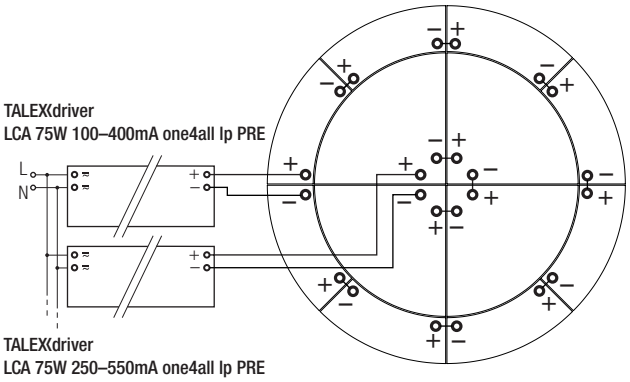
CLE Quadrant Lens G1 236mm 900 lm ADV



CLE Quadrant Lens G1 376mm 2100lm ADV

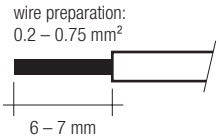


CLE Quadrant Lens G1 376mm 2100lm ADV +
CLE Wing Lens G1 516mm 900lm ADV



3.3 Wiring type and cross section

The wiring can be solid cable 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.

3.4 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 with 4 screws 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.

3.5 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. 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 maintenace 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 inital luminous flux, respectivly 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.

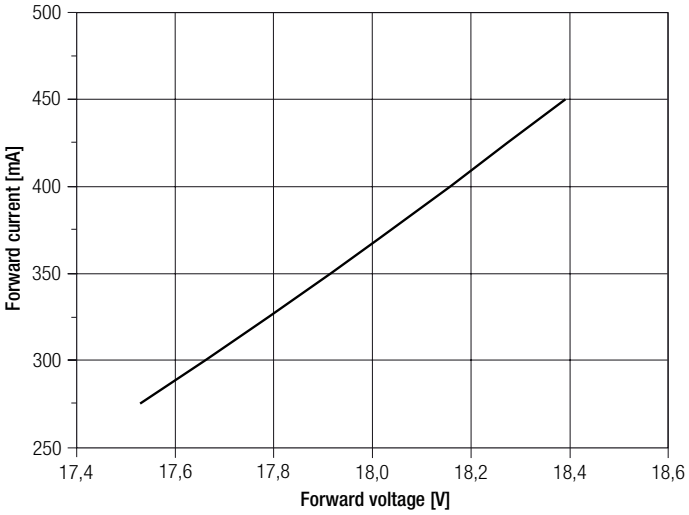
4.2 Lumen maintenance for CLE

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
370 mA	45 °C	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h
	55 °C	28,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h
	65 °C	14,000 h	35,000 h	29,000 h	50,000 h	44,000 h	50,000 h

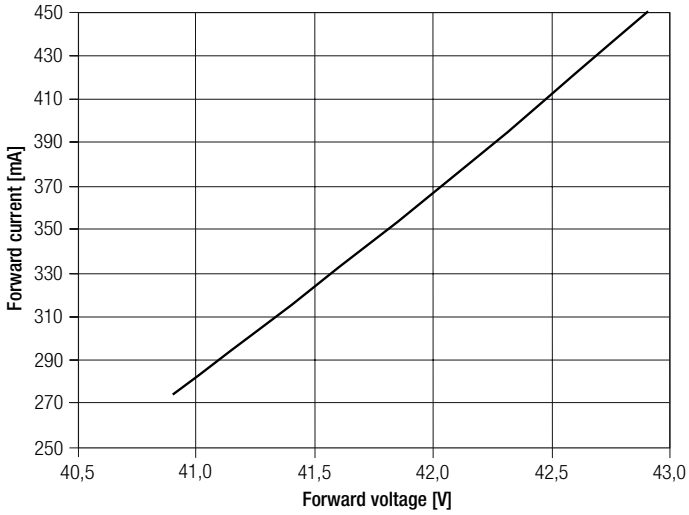
5. Electrical values

5.1 Typ. forward voltage vs. forward current

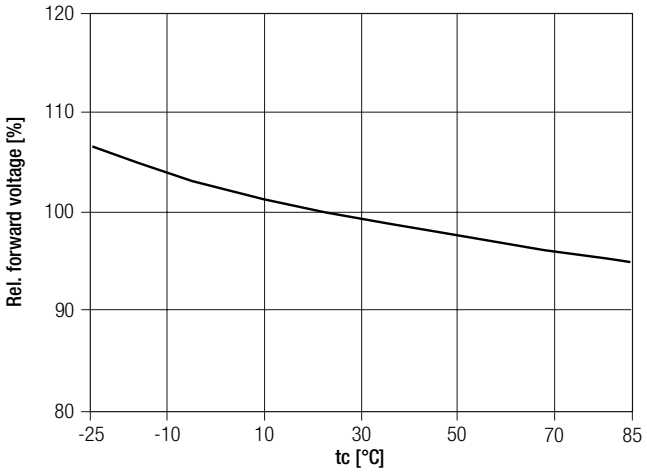
CLE Quadrant Lens G1 236mm 900lm + CLE Wing Lens G1 516mm 900lm



CLE Quadrant Lens G1 376mm 2100lm



5.2 Forward voltage vs. tp temperature



The diagrams are based on statistic values.
The real values can be different.

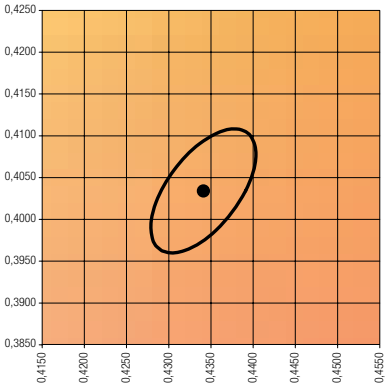
6. Photometric charcteristics

6.1 Coordinates and tolerances according to CIE 1931

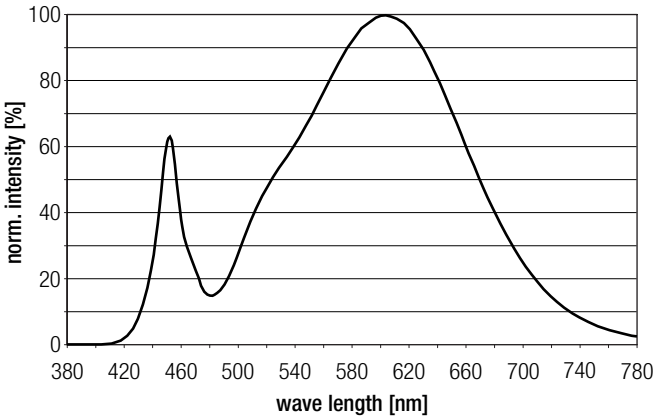
The specified colour coordinates are measured by a current impulse of 250 mA and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4344	0.4032

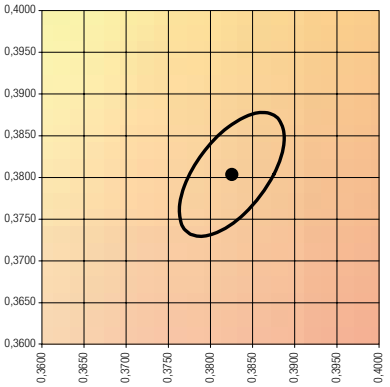


MacAdam Ellipse: 3SDCM

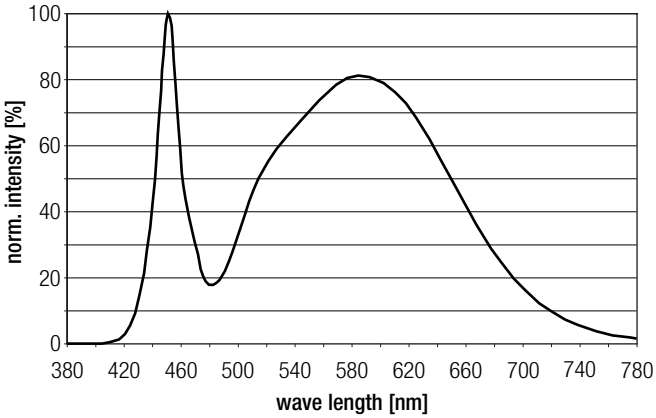


4,000 K

	x0	y0
Centre	0.3828	0.3803

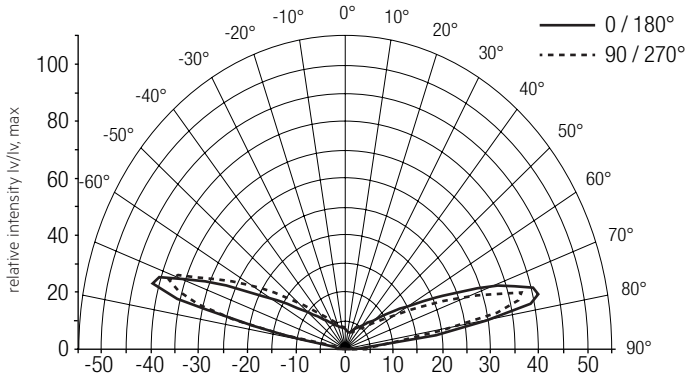


MacAdam Ellipse: 3SDCM



6.2 Light distribution

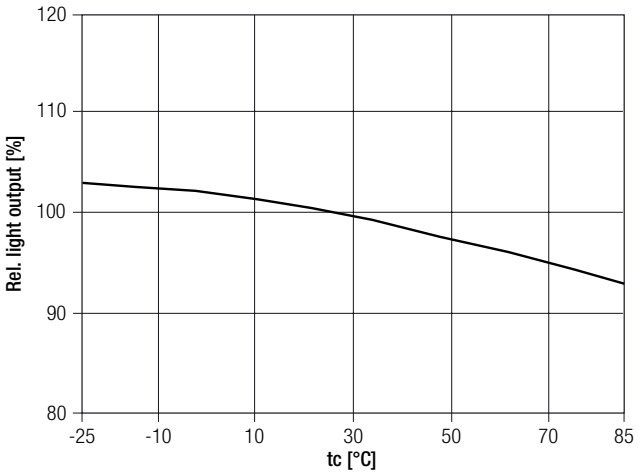
The optical design of the STARK QLE product line ensures optimum homogenity for the light distribution.



The colour temperature is measured over the complete module. The single LED light points can be outside of 3SDCM.
To ensure an ideal mixture of colours and a homogenious light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 7 cm) should be used.

For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

6.3 Relative luminous flux vs. tc temperature



6.4 Relative luminous flux vs. operating current