Module CLE Shallow G2 EXC

Modules CLE excite

Product description

- Ideal for extra-flat luminaires, minimum backlight distance 30 mm
- For round shaped luminaires with a diameter of 160 – 1,082 mm
- Compatible with Tridonic ADV, EXC and PRE Driver in different modes (HE, NM, HO), enables more flexibility on luminaire design
- Self cooling (no additional heat sink required)
- Long life-time: 72,000 hours
- 5-year guarantee

Optical properties

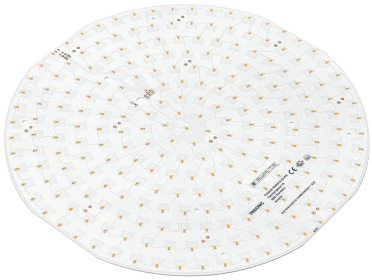
- Colour temperatures 3,000 K and 4,000 K
- High color rendering index CRI > 90
- Small colour tolerance MacAdam 3①

Mechanical properties

- Module dimension ø160.5 mm, ø360 mm, ø522 mm, ø802 mm and ø1,082 mm, from ø522 mm with several module segments
- Simple installation (e. g. screws)

Standards, page 3

Colour temperatures and tolerances, page 8



CLE SHALLOW G2 370mm 2900lm EXC

CLE SHALLOW G2 802mm 3800lm EXC

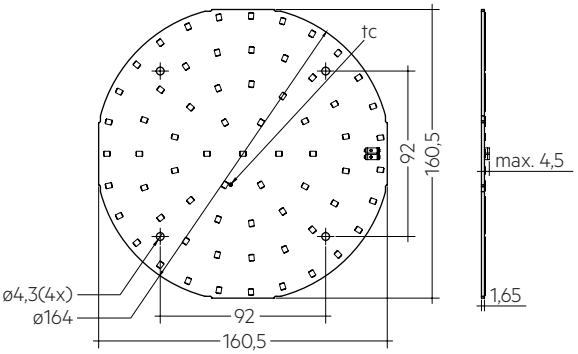
RoHS

Module CLE Shallow G2 EXC

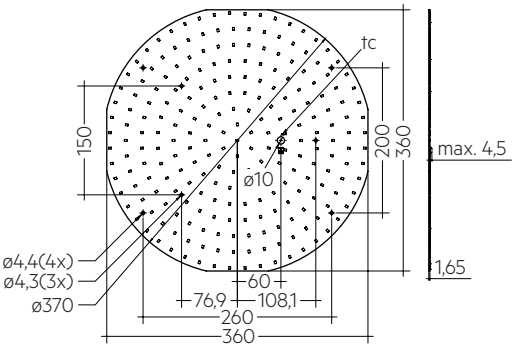
Modules CLE excite

Technical data

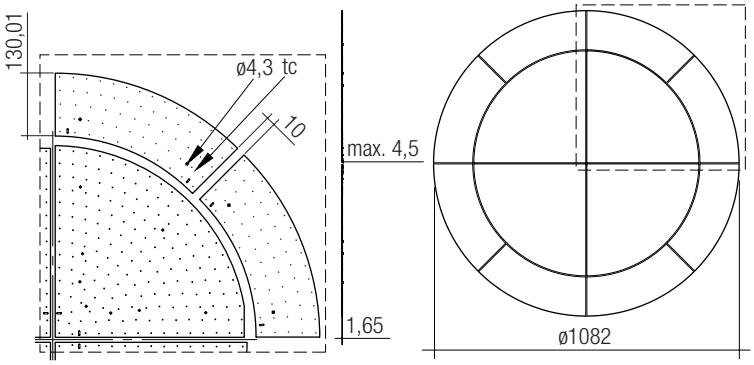
Beam characteristic	120°
Ambient temperature range	-25 … +65 °C
tp rated	65 °C
tc	85 °C
Irated for CLE Shallow G2 160mm	150 mA
Irated for CLE Shallow G2 370mm	500 mA
Irated for CLE Shallow G2 522mm	300 mA
Irated for CLE Shallow G2 802mm	650 mA
Irated for CLE Shallow G2 1082mm	450 mA
Imax for CLE Shallow G2 160mm	600 mA
Imax for CLE Shallow G2 370mm	1,900 mA
Imax for CLE Shallow G2 522mm	950 mA
Imax for CLE Shallow G2 802mm	2,150 mA
Imax for CLE Shallow G2 1082mm	1,500 mA
Max. permissible LF current ripple for CLE Shallow G2 160mm	1,200 mA
Max. permissible LF current ripple for CLE Shallow G2 370mm	3,600 mA
Max. permissible LF current ripple for CLE Shallow G2 522mm	1,800 mA
Max. permissible LF current ripple for CLE Shallow G2 802mm	4,200 mA
Max. permissible LF current ripple for CLE Shallow G2 1082mm	2,600 mA
Max. permissible peak current for CLE Shallow G2 160mm	1,800 mA / max. 10 ms
Max. permissible peak current for CLE Shallow G2 370mm	5,400 mA / max. 10 ms
Max. permissible peak current for CLE Shallow G2 522mm	2,700 mA / max. 10 ms
Max. permissible peak current for CLE Shallow G2 802mm	6,300 mA / max. 10 ms
Max. permissible peak current for CLE Shallow G2 1082mm	3,900 mA / max. 10 ms
Max. working voltage for insulation[2]	250 V
Insulation test voltage	1.5 kV
CTI of the printed circuit board	≥ 600
ESD classification	severity level 4
Risk group (EN 62471:2008)[3]	RG0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



CLE Shallow G2 160mm 750lm EXC



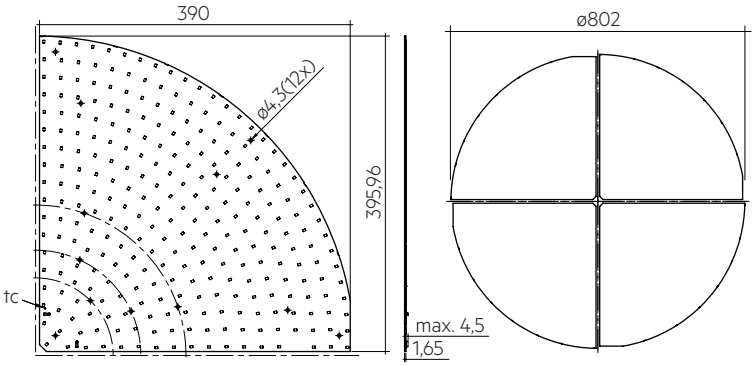
CLE Shallow G2 370mm 2900lm EXC



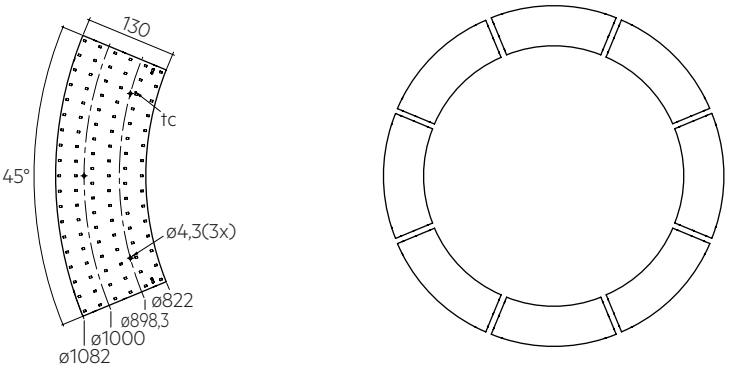
CLE Shallow G2 522mm 1750lm EXC (details see 3.4 Mounting instructions)

Module CLE Shallow G2 EXC

Modules CLE excite



CLE Shallow G2 802mm 3800lm EXC (details see 3.4 Mounting instructions)



CLE Shallow G2 1082mm 1500lm EXC (details see 3.4 Mounting instructions)

Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
CLE SHALLOW G2 160MM 750LM 930 EXC	**89603353**	3.000 K	288 pc(s).	0.053 kg
CLE SHALLOW G2 160MM 750LM 940 EXC	**89603354**	4.000 K	288 pc(s).	0.053 kg
CLE SHALLOW G2 370MM 2900LM 930 EXC	**89603355**	3.000 K	10 pc(s).	0.290 kg
CLE SHALLOW G2 370MM 2900LM 940 EXC	**89603356**	4.000 K	10 pc(s).	0.290 kg
CLE SHALLOW G2 522MM 1750LM 930 EXC	**89603357**	3.000 K	20 pc(s).	0.140 kg
CLE SHALLOW G2 522MM 1750LM 940 EXC	**89603358**	4.000 K	20 pc(s).	0.140 kg
CLE SHALLOW G2 802MM 3800LM 930 EXC	**89603359**	3.000 K	20 pc(s).	0.336 kg
CLE SHALLOW G2 802MM 3800LM 940 EXC	**89603360**	4.000 K	20 pc(s).	0.336 kg
CLE SHALLOW G2 1082MM 1500LM 930 EXC	**89603361**	3.000 K	40 pc(s).	0.146 kg
CLE SHALLOW G2 1082MM 1500LM 940 EXC	**89603362**	4.000 K	40 pc(s).	0.146 kg

Specific technical data

Type[5]	Photo-metric code	Typ. luminous flux at tp = 25 °C[4]	Typ. luminous flux at tp = 65 °C[4]	Typ. forward current	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 65 °C[4]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C	Efficacy of the system at tp = 65 °C	Colour rendering index CRI
CLE Shallow G2 160mm – Operating mode HE at 150 mA											
CLE SHALLOW G2 160MM 750LM 930 EXC	930/359	740 lm	710 lm	150 mA	28.7 V	29.1 V	4.3 W	170 lm/W	164 lm/W	151 lm/W	> 90
CLE SHALLOW G2 160MM 750LM 940 EXC	940/359	770 lm	740 lm	150 mA	28.7 V	29.1 V	4.3 W	177 lm/W	171 lm/W	157 lm/W	> 90
CLE Shallow G2 160mm – Operating mode NM at 350 mA											
CLE SHALLOW G2 160MM 750LM 930 EXC	930/359	1,710 lm	1,630 lm	350 mA	29.5 V	29.8 V	10.3 W	164 lm/W	158 lm/W	145 lm/W	> 90
CLE SHALLOW G2 160MM 750LM 940 EXC	940/359	1,780 lm	1,700 lm	350 mA	29.5 V	29.8 V	10.3 W	171 lm/W	165 lm/W	152 lm/W	> 90
CLE Shallow G2 160mm – Operating mode HO at 500 mA											
CLE SHALLOW G2 160MM 750LM 930 EXC	930/359	2,380 lm	2,280 lm	500 mA	29.9 V	30.2 V	15.0 W	158 lm/W	153 lm/W	141 lm/W	> 90
CLE SHALLOW G2 160MM 750LM 940 EXC	940/359	2,490 lm	2,380 lm	500 mA	29.9 V	30.2 V	15.0 W	165 lm/W	159 lm/W	146 lm/W	> 90
CLE Shallow G2 160mm – Operating mode HO at 600 mA											
CLE SHALLOW G2 160MM 750LM 930 EXC	930/359	2,790 lm	2,670 lm	600 mA	30.2 V	30.5 V	18.1 W	152 lm/W	147 lm/W	135 lm/W	> 90
CLE SHALLOW G2 160MM 750LM 940 EXC	940/359	2,910 lm	2,780 lm	600 mA	30.2 V	30.5 V	18.1 W	159 lm/W	154 lm/W	142 lm/W	> 90
CLE Shallow G2 370mm – Operating mode HE at 500 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	2,910 lm	2,780 lm	500 mA	34.0 V	34.4 V	17.0 W	169 lm/W	164 lm/W	151 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	3,040 lm	2,910 lm	500 mA	34.0 V	34.4 V	17.0 W	177 lm/W	171 lm/W	157 lm/W	> 90
CLE Shallow G2 370mm – Operating mode NM at 700 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	4,060 lm	3,880 lm	700 mA	34.4 V	34.7 V	24.0 W	167 lm/W	161 lm/W	148 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	4,230 lm	4,050 lm	700 mA	34.4 V	34.7 V	24.0 W	174 lm/W	168 lm/W	155 lm/W	> 90
CLE Shallow G2 370mm – Operating mode HO at 900 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	5,190 lm	4,960 lm	900 mA	34.6 V	35.0 V	31.1 W	165 lm/W	159 lm/W	146 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	5,410 lm	5,180 lm	900 mA	34.6 V	35.0 V	31.1 W	172 lm/W	166 lm/W	153 lm/W	> 90
CLE Shallow G2 370mm – Operating mode HO at 1,050 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	6,060 lm	5,790 lm	1,050 mA	34.8 V	35.2 V	36.5 W	164 lm/W	158 lm/W	145 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	6,320 lm	6,040 lm	1,050 mA	34.8 V	35.2 V	36.5 W	171 lm/W	165 lm/W	152 lm/W	> 90
CLE Shallow G2 370mm – Operating mode HO at 1,400 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	7,940 lm	7,590 lm	1,400 mA	35.2 V	35.6 V	49.3 W	159 lm/W	154 lm/W	142 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	8,280 lm	7,920 lm	1,400 mA	35.2 V	35.6 V	49.3 W	166 lm/W	161 lm/W	148 lm/W	> 90
CLE Shallow G2 370mm – Operating mode HO at 1,900 mA											
CLE SHALLOW G2 370MM 2900LM 930 EXC	930/359	10,400 lm	9,950 lm	1,900 mA	35.8 V	36.2 V	68.0 W	151 lm/W	146 lm/W	134 lm/W	> 90
CLE SHALLOW G2 370MM 2900LM 940 EXC	940/359	10,860 lm	10,380 lm	1,900 mA	35.8 V	36.2 V	68.0 W	158 lm/W	153 lm/W	141 lm/W	> 90
CLE Shallow G2 522mm – Operating mode HE at 300 mA											
CLE SHALLOW G2 522MM 1750LM 930 EXC	930/359	1,740 lm	1,670 lm	300 mA	34.2 V	34.6 V	10.3 W	168 lm/W	162 lm/W	149 lm/W	> 90
CLE SHALLOW G2 522MM 1750LM 940 EXC	940/359	1,820 lm	1,740 lm	300 mA	34.2 V	34.6 V	10.3 W	175 lm/W	170 lm/W	156 lm/W	> 90
CLE Shallow G2 522mm – Operating mode NM at 400 mA											
CLE SHALLOW G2 522MM 1750LM 930 EXC	930/359	2,310 lm	2,210 lm	400 mA	34.5 V	34.9 V	13.8 W	166 lm/W	160 lm/W	147 lm/W	> 90
CLE SHALLOW G2 522MM 1750LM 940 EXC	940/359	2,410 lm	2,310 lm	400 mA	34.5 V	34.9 V	13.8 W	173 lm/W	167 lm/W	154 lm/W	> 90
CLE Shallow G2 522mm – Operating mode HO at 500 mA											
CLE SHALLOW G2 522MM 1750LM 930 EXC	930/359	2,890 lm	2,760 lm	500 mA	34.7 V	35.1 V	17.4 W	164 lm/W	159 lm/W	146 lm/W	> 90
CLE SHALLOW G2 522MM 1750LM 940 EXC	940/359	3,020 lm	2,880 lm	500 mA	34.7 V	35.1 V	17.4 W	172 lm/W	166 lm/W	153 lm/W	> 90
CLE Shallow G2 522mm – Operating mode HO at 700 mA											
CLE SHALLOW G2 522MM 1750LM 930 EXC	930/359	3,970 lm	3,790 lm	700 mA	35.2 V	35.6 V	24.6 W	159 lm/W	154 lm/W	142 lm/W	> 90
CLE SHALLOW G2 522MM 1750LM 940 EXC	940/359	4,140 lm	3,960 lm	700 mA	35.2 V	35.6 V	24.6 W	166 lm/W	161 lm/W	148 lm/W	> 90
CLE Shallow G2 522mm – Operating mode HO at 950 mA											
CLE SHALLOW G2 522MM 1750LM 930 EXC	930/359	5,200 lm	4,970 lm	950 mA	35.8 V	36.2 V	34.0 W	151 lm/W	146 lm/W	134 lm/W	> 90
CLE SHALLOW G2 522MM 1750LM 940 EXC	940/359	5,430 lm	5,190 lm	950 mA	35.8 V	36.2 V	34.0 W	158 lm/W	153 lm/W	141 lm/W	> 90

[1] Integral measurement over the complete module.

[2] If mounted with M4 screws.

[3] Measured at operating mode HO.

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

[5] HE ... high efficiency, NM ... nominal mode, HO ... high output.

Specific technical data

Type[5]	Photo-metric code	Typ. luminous flux at tp = 25 °C[4]	Typ. luminous flux at tp = 65 °C[4]	Typ. forward current	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 65 °C[4]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C	Efficacy of the system at tp = 65 °C	Colour rendering index CRI
CLE Shallow G2 802mm – Operating mode HE at 650 mA											
CLE SHALLOW G2 802MM 3800LM 930 EXC	930/359	3,780 lm	3,610 lm	650 mA	34.1 V	34.5 V	22.2 W	168 lm/W	163 lm/W	150 lm/W	> 90
CLE SHALLOW G2 802MM 3800LM 940 EXC	940/359	3,950 lm	3,770 lm	650 mA	34.1 V	34.5 V	22.2 W	176 lm/W	170 lm/W	156 lm/W	> 90
CLE Shallow G2 802mm – Operating mode NM at 900 mA											
CLE SHALLOW G2 802MM 3800LM 930 EXC	930/359	5,210 lm	4,980 lm	900 mA	34.5 V	34.9 V	31.0 W	166 lm/W	161 lm/W	148 lm/W	> 90
CLE SHALLOW G2 802MM 3800LM 940 EXC	940/359	5,430 lm	5,200 lm	900 mA	34.5 V	34.9 V	31.0 W	173 lm/W	168 lm/W	155 lm/W	> 90
CLE Shallow G2 802mm – Operating mode HO at 1,050 mA											
CLE SHALLOW G2 802MM 3800LM 930 EXC	930/359	6,050 lm	5,790 lm	1,050 mA	34.6 V	35.0 V	36.3 W	165 lm/W	160 lm/W	147 lm/W	> 90
CLE SHALLOW G2 802MM 3800LM 940 EXC	940/359	6,320 lm	6,040 lm	1,050 mA	34.6 V	35.0 V	36.3 W	172 lm/W	166 lm/W	153 lm/W	> 90
CLE Shallow G2 802mm – Operating mode HO at 1,750 mA											
CLE SHALLOW G2 802MM 3800LM 930 EXC	930/359	9,860 lm	9,430 lm	1,750 mA	35.3 V	35.7 V	61.8 W	158 lm/W	153 lm/W	141 lm/W	> 90
CLE SHALLOW G2 802MM 3800LM 940 EXC	940/359	10,290 lm	9,840 lm	1,750 mA	35.3 V	35.7 V	61.8 W	165 lm/W	159 lm/W	146 lm/W	> 90
CLE Shallow G2 802mm – Operating mode HO at 2,150 mA											
CLE SHALLOW G2 802MM 3800LM 930 EXC	930/359	11,800 lm	11,280 lm	2,150 mA	35.7 V	36.1 V	76.8 W	152 lm/W	147 lm/W	135 lm/W	> 90
CLE SHALLOW G2 802MM 3800LM 940 EXC	940/359	12,310 lm	11,770 lm	2,150 mA	35.7 V	36.1 V	76.8 W	159 lm/W	153 lm/W	141 lm/W	> 90
CLE Shallow G2 1082mm – Operating mode HE at 450 mA											
CLE SHALLOW G2 1082MM 1500LM 930 EXC	930/359	1,610 lm	1,540 lm	450 mA	21.1 V	21.3 V	9.5 W	168 lm/W	162 lm/W	149 lm/W	> 90
CLE SHALLOW G2 1082MM 1500LM 940 EXC	940/359	1,680 lm	1,610 lm	450 mA	21.1 V	21.3 V	9.5 W	175 lm/W	170 lm/W	156 lm/W	> 90
CLE Shallow G2 1082mm – Operating mode NM at 625 mA											
CLE SHALLOW G2 1082MM 1500LM 930 EXC	930/359	2,220 lm	2,120 lm	625 mA	21.3 V	21.5 V	13.3 W	165 lm/W	160 lm/W	147 lm/W	> 90
CLE SHALLOW G2 1082MM 1500LM 940 EXC	940/359	2,320 lm	2,210 lm	625 mA	21.3 V	21.5 V	13.3 W	172 lm/W	167 lm/W	154 lm/W	> 90
CLE Shallow G2 1082mm – Operating mode HO at 725 mA											
CLE SHALLOW G2 1082MM 1500LM 930 EXC	930/359	2,580 lm	2,460 lm	725 mA	21.4 V	21.6 V	15.5 W	164 lm/W	159 lm/W	146 lm/W	> 90
CLE SHALLOW G2 1082MM 1500LM 940 EXC	940/359	2,690 lm	2,570 lm	725 mA	21.4 V	21.6 V	15.5 W	172 lm/W	166 lm/W	153 lm/W	> 90
CLE Shallow G2 1082mm – Operating mode HO at 1,200 mA											
CLE SHALLOW G2 1082MM 1500LM 930 EXC	930/359	4,090 lm	3,910 lm	1,200 mA	21.8 V	22.1 V	26.2 W	154 lm/W	149 lm/W	137 lm/W	> 90
CLE SHALLOW G2 1082MM 1500LM 940 EXC	940/359	4,260 lm	4,080 lm	1,200 mA	21.8 V	22.1 V	26.2 W	161 lm/W	156 lm/W	144 lm/W	> 90
CLE Shallow G2 1082mm – Operating mode HO at 1,500 mA											
CLE SHALLOW G2 1082MM 1500LM 930 EXC	930/359	5,030 lm	4,810 lm	1,500 mA	22.1 V	22.4 V	33.2 W	150 lm/W	145 lm/W	133 lm/W	> 90
CLE SHALLOW G2 1082MM 1500LM 940 EXC	940/359	5,260 lm	5,020 lm	1,500 mA	22.1 V	22.4 V	33.2 W	157 lm/W	152 lm/W	140 lm/W	> 90

[1] Integral measurement over the complete module.

[2] If mounted with M4 screws.

[3] Measured at operating mode HO.

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

[5] HE ... high efficiency, NM ... nominal mode, HO ... high output.

1. Standards

IEC 62031
IEC 62471
IEC 62778
IEC 61547
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	MacAdam initial	MacAdam 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	Energy classification
CLE Shallow G2 EXC	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 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.

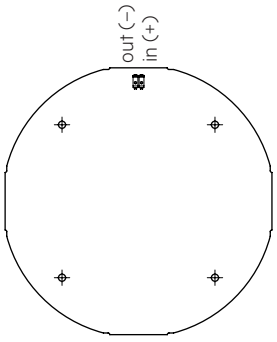
With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. If one module fails, the remaining modules may be overloaded.

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

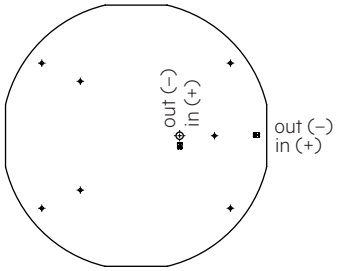
CLE are basic insulated up to 250 V against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led Driver (also against earth) is above 250 V, an additional insulation between LED module and heat sink is required (for example by insulated thermal 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

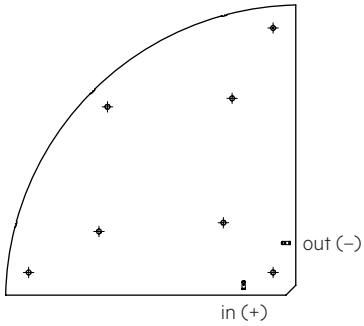
CLE Shallow G2 160mm 750lm EXC



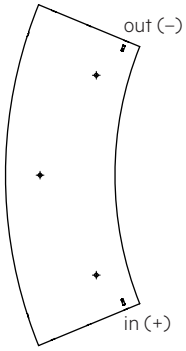
CLE Shallow G2 370mm 2900lm EXC



CLE Shallow G2 522/802mm 1750/3800lm EXC

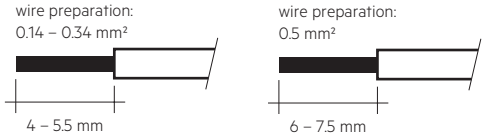


CLE Shallow G2 1082mm 1500lm EXC



3.3 Wiring type and cross section

The wiring can be in solid with a cross section of 0.14 to 0.5 mm².
No reconnection with smaller diameters possible if used with >0.34 mm².



To remove the wires use a suitabel tool (Wago 206-859) or through twist and pull.

3.4 Mounting instruction

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

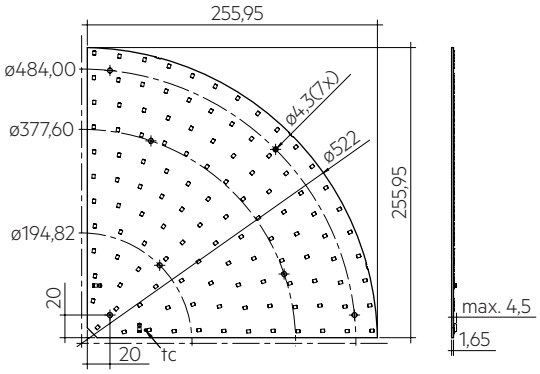
Max. torque for fixing: 0.5 Nm.

The LED modules are mounted with 4 screws or with ACL clips.
In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.

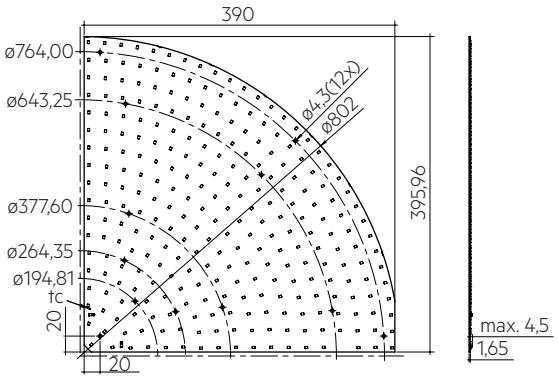
Chemical substance may harm the LED module. Chemical reactions could lead to colour shift, reduced luminous flux or a total failure of the module caused by corrosion of electrical connections.

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.

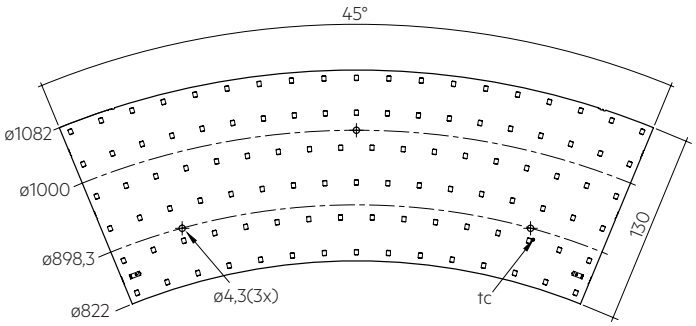
CLE Shallow G2 522mm 1750lm EXC



CLE Shallow G2 802mm 3800lm EXC



CLE Shallow G2 1082mm 1500lm EXC



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 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.

4.2 Lumen maintenance for CLE

CLE Shallow G2 160mm 750lm 9x0 EXC

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
150 mA	45 °C	42,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	50 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	55 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	60 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	65 °C	39,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	70 °C	38,000 h	49,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	75 °C	37,000 h	48,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	80 °C	36,000 h	46,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	85 °C	35,000 h	45,000 h	37,000 h	72,000 h	72,000 h	72,000 h

CLE Shallow G2 370mm 2900lm 9x0 EXC

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
500 mA	45 °C	42,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	50 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	55 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	60 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	65 °C	39,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	70 °C	38,000 h	49,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	75 °C	37,000 h	48,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	80 °C	36,000 h	46,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	85 °C	35,000 h	45,000 h	37,000 h	72,000 h	72,000 h	72,000 h

CLE Shallow G2 522mm 1750lm 9x0 EXC

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
300 mA	45 °C	42,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	50 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	55 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	60 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	65 °C	39,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	70 °C	38,000 h	49,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	75 °C	37,000 h	48,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	80 °C	36,000 h	46,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	85 °C	35,000 h	45,000 h	37,000 h	72,000 h	72,000 h	72,000 h

CLE Shallow G2 802mm 3800lm 9x0 EXC

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
650 mA	45 °C	42,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	50 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	55 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	60 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	65 °C	39,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	70 °C	38,000 h	49,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	75 °C	37,000 h	48,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	80 °C	36,000 h	46,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	85 °C	35,000 h	45,000 h	37,000 h	72,000 h	72,000 h	72,000 h

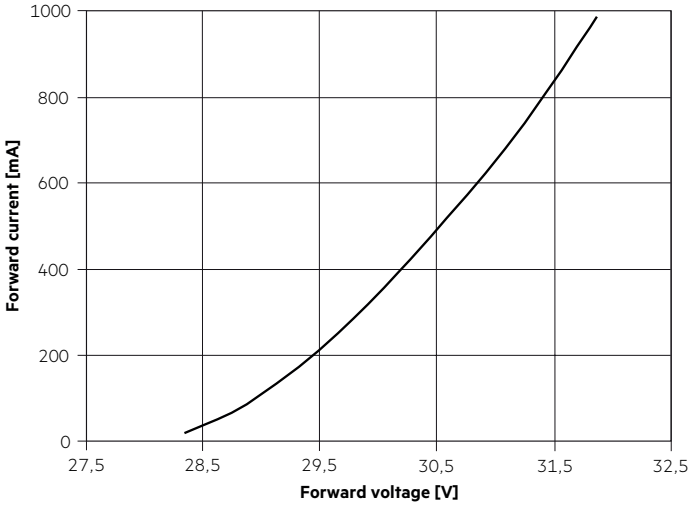
CLE Shallow G2 1082mm 1500lm 9x0 EXC

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
450 mA	45 °C	42,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	50 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	55 °C	41,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	60 °C	40,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	65 °C	39,000 h	72,000 h	72,000 h	72,000 h	72,000 h	72,000 h
	70 °C	38,000 h	49,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	75 °C	37,000 h	48,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	80 °C	36,000 h	46,000 h	37,000 h	72,000 h	72,000 h	72,000 h
	85 °C	35,000 h	45,000 h	37,000 h	72,000 h	72,000 h	72,000 h

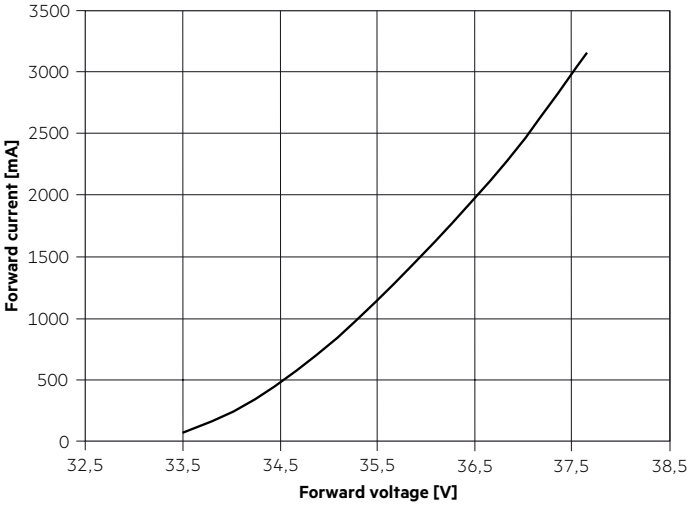
5. Electrical values

5.1 Typ. forward voltage vs. forward current

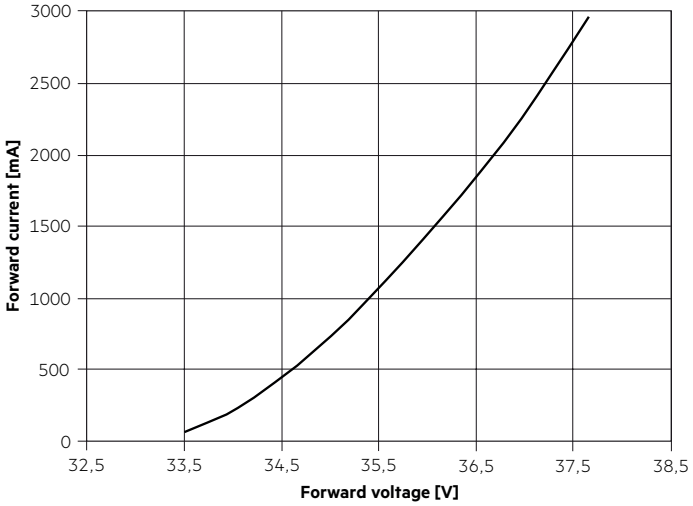
CLE Shallow G2 160mm 750lm



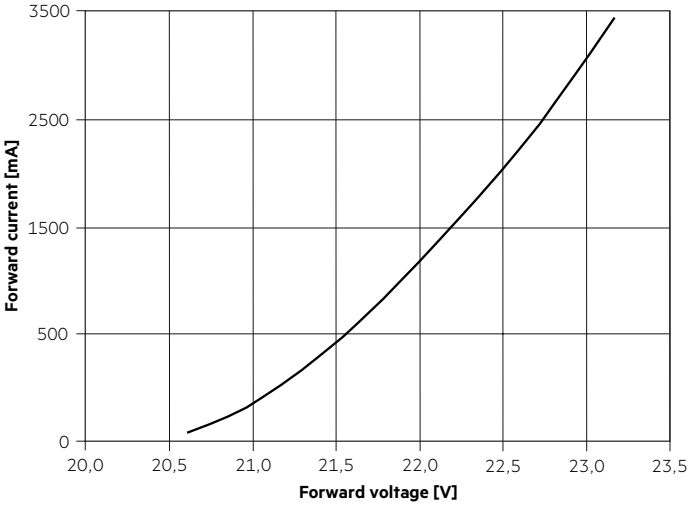
CLE Shallow G2 802mm 3800lm



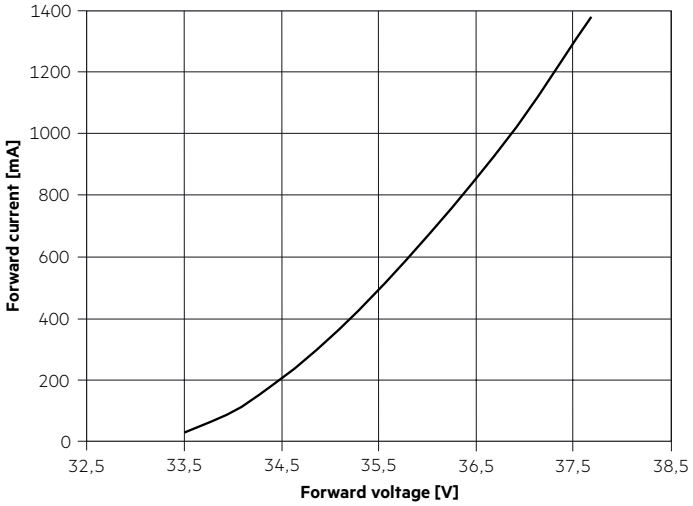
CLE Shallow G2 370mm 2900lm



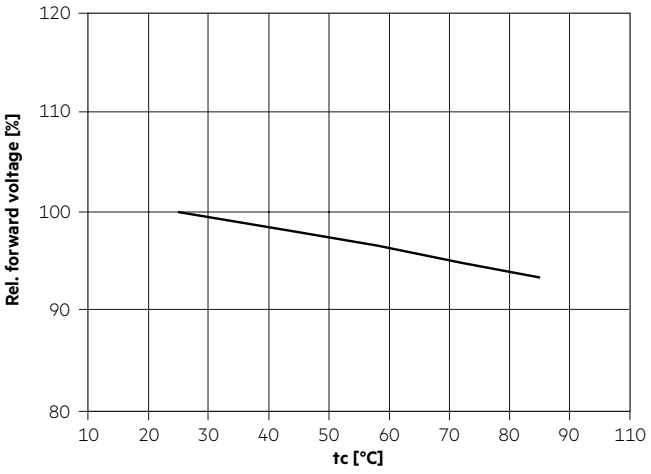
CLE Shallow G2 1082mm 1500lm



CLE Shallow G2 522mm 1750lm



5.2 Forward voltage vs. tp temperature



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

6. Photometric characteristics

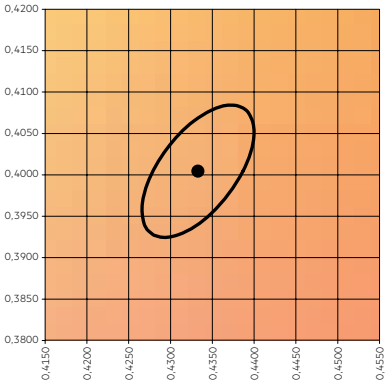
6.1 Coordinates and tolerances according to CIE 1931

The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

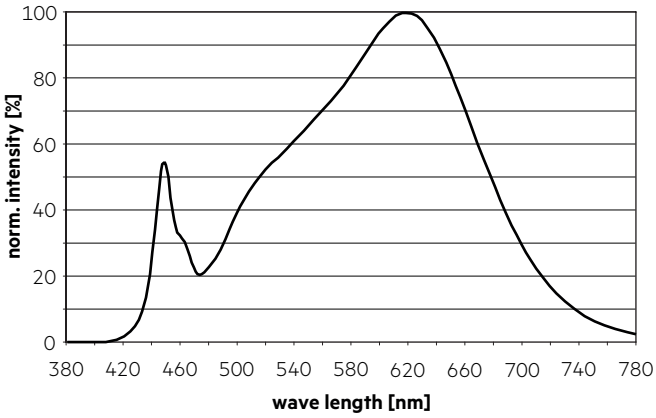
Module type	Current impulse
CLE SHALLOW G2 160MM 750LM 9x0 EXC	150 mA
CLE SHALLOW G2 370MM 2900LM 9x0 EXC	500 mA
CLE SHALLOW G2 522MM 1750LM 9x0 EXC	300 mA
CLE SHALLOW G2 802MM 3800LM 9x0 EXC	650 mA
CLE SHALLOW G2 1082MM 1500LM 9x0 EXC	450 mA

3,000 K

	x0	y0
Centre	0.4333	0.4006

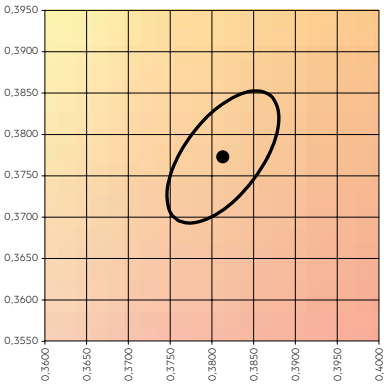


MacAdam Ellipse: 3SDCM

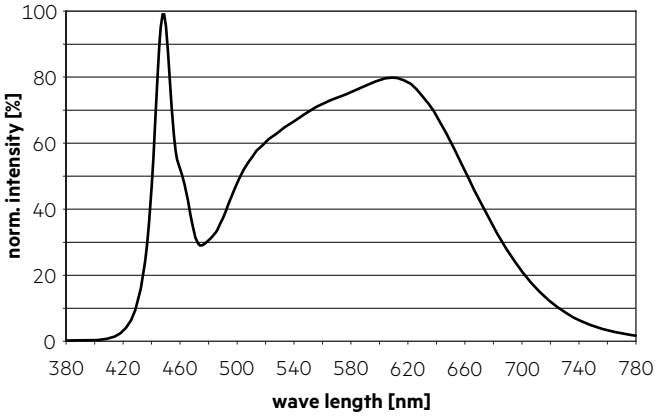


4,000 K

	x0	y0
Centre	0.3813	0.3773

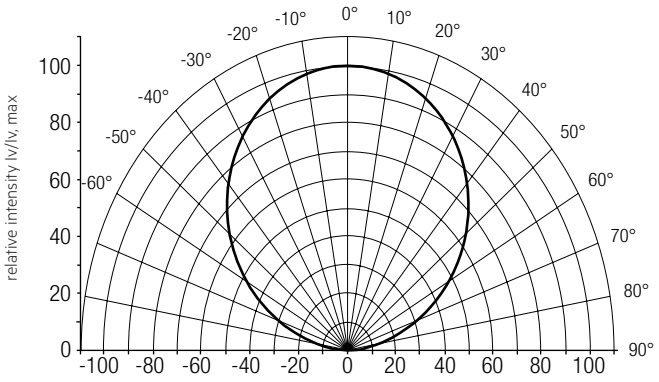


MacAdam Ellipse: 3SDCM



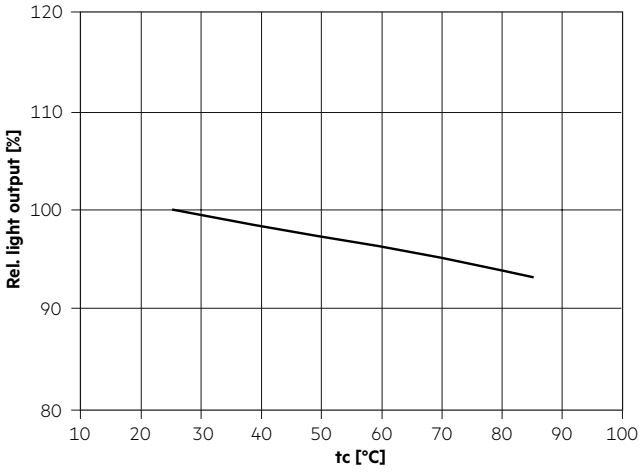
6.2 Light distribution

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



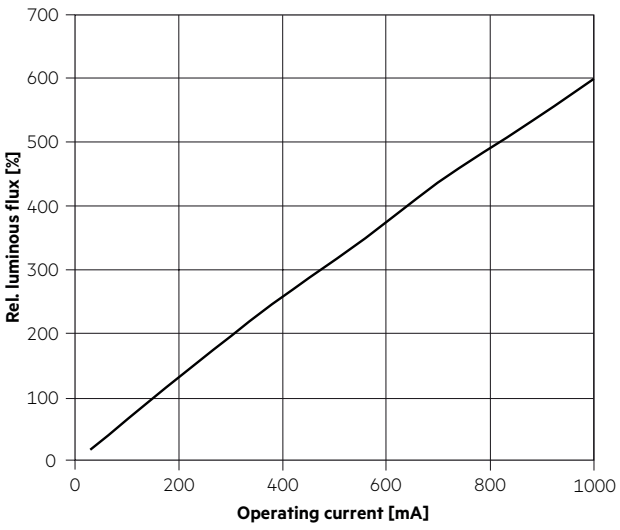
The colour temperature is measured over the complete module. The single LED light points can be outside of 3SDCM.
To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 7 cm) should be used.

6.3 Relative luminous flux vs. tc temperature

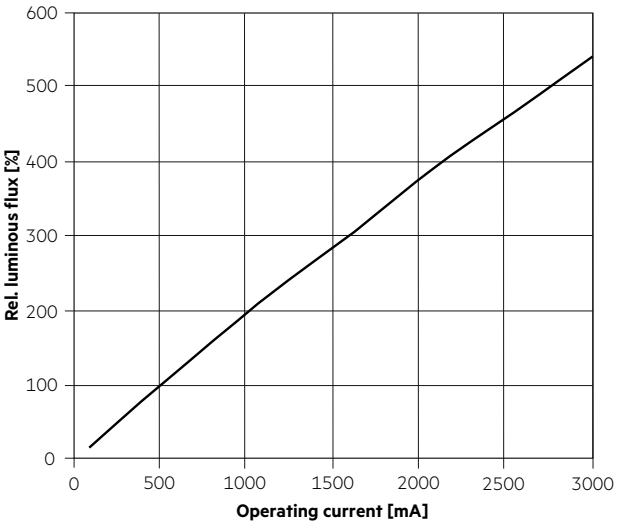


6.4 Relative luminous flux vs. operating current

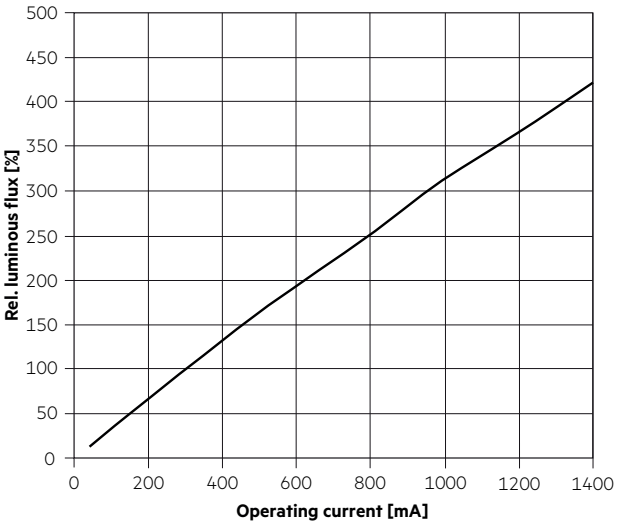
CLE Shallow G2 160mm 750lm



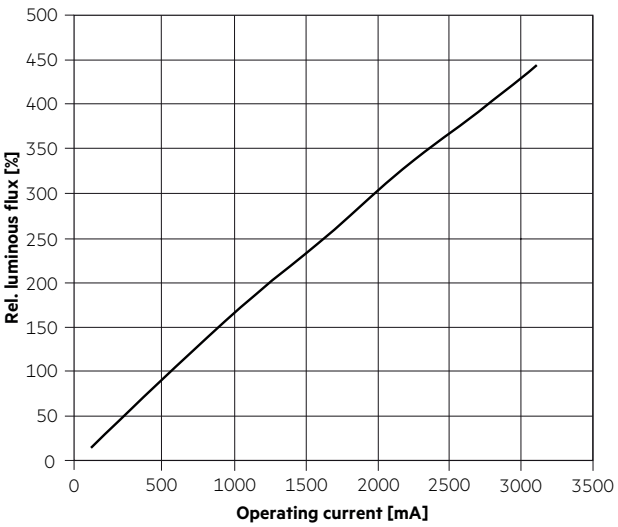
CLE Shallow G2 370mm 2900lm



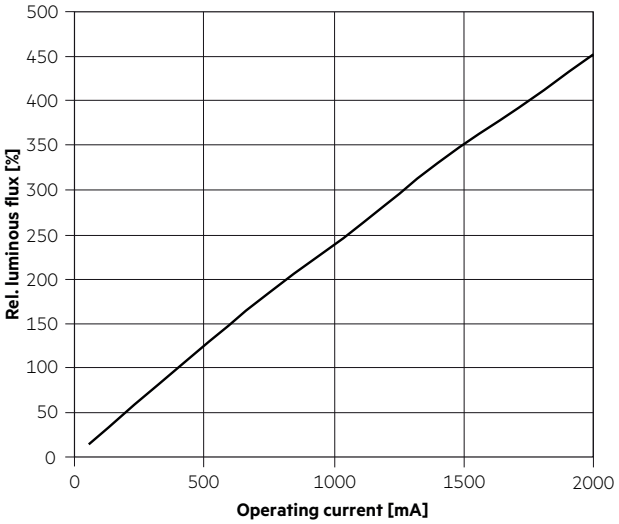
CLE Shallow G2 522mm 1750lm



CLE Shallow G2 802mm 3800lm



CLE Shallow G2 1082mm 1500lm



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.