Module QLE G4 ADV
Modules QLE ADVANCED

Product description

- Ideal for panel lights
- New form factor – rectangular module for lower mounting and wiring effort
- Low forward voltage (< 60 V) of single module allows SELV solutions
- Typ. luminous flux 2,500 and 1,250 lm
- LED system solution with outstanding system efficacy up to 168 lm/W, consisting of squared LED modules and dimmable LED control gear LCA 50W 150–400mA lp PRE
- Efficacy of the module up to 185 lm/W
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3①
- Small luminous flux tolerances
- Colour temperatures 3,000, 4,000, 5,000 and 6,500 K
- Module dimension 488 x 237 mm and 240 x 237 mm
- Excellent homogeneity thanks to wide beam angle package
- Self cooling (no additional heat sink required)
- 2 double push terminals for quick and simple serial and parallel wiring
- Simple installation (e.g. screws)
- Long life-time: 50,000 hours
- 5-year guarantee

→

Standards, page 6

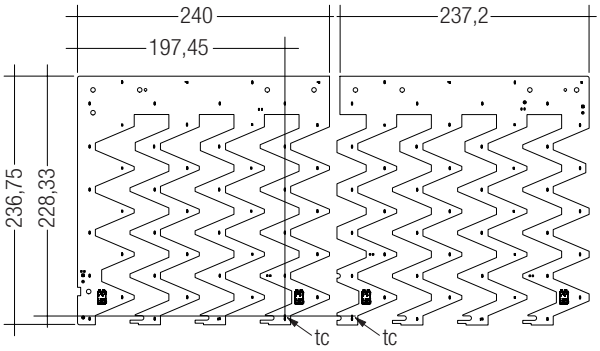
Colour temperatures and tolerances, page 12

Typical applications

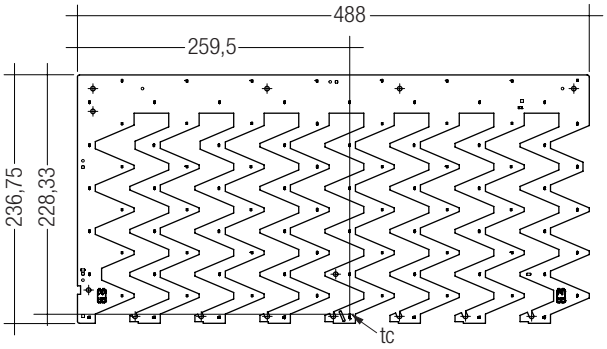
Module QLE G4 ADV
Modules QLE ADVANCED

Technical data

Beam characteristic	150°
Ambient temperature range	-25 … +45 °C
tp rated	45 °C
tc	85 °C
Irated	325 mA
Imax	650 mA
Max. DC forward current	800 mA
Max. permissible LF current ripple	880 mA
Max. permissible peak current	1,200 mA / max. 10 ms
Max. working voltage for insulation[②]	320 V
Insulation test voltage	1,6 kV
CTI of the printed circuit board	≥ 600
ESD classification	severity level 4
Risk group (IEC 62471:2008)[③]	0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



QLE G4 240x237mm 1250lm ADV



QLE G4 488x237mm 2500lm ADV

Ordering data

Type	Article number	Colour temperature	Packaging carton[⑥]	Weight per pc.
Module QLE G4, rectangular				
QLE G4 488x237mm 2500lm 830 ADV	**89602377**	3,000 K	10 pc(s).	0.195 kg
QLE G4 488x237mm 2500lm 840 ADV	**89602378**	4,000 K	10 pc(s).	0.195 kg
QLE G4 488x237mm 2500lm 850 ADV	**89602379**	5,000 K	10 pc(s).	0.195 kg
QLE G4 488x237mm 2500lm 865 ADV	**89602380**	6,500 K	10 pc(s).	0.195 kg
Module QLE G4, quadrant				
QLE G4 240x237mm 1250lm 830 ADV	**89602392**	3,000 K	20 pc(s).	0.090 kg
QLE G4 240x237mm 1250lm 840 ADV	**89602393**	4,000 K	20 pc(s).	0.090 kg
QLE G4 240x237mm 1250lm 850 ADV	**89602394**	5,000 K	20 pc(s).	0.090 kg
QLE G4 240x237mm 1250lm 865 ADV	**89602395**	6,500 K	20 pc(s).	0.090 kg
Sample box for design-in				
QLE G4 488x237mm 2500lm 840 ADV QTY2 (includes 2 rectangular LED modules)	**89602617**	4,000 K	–	0.730 kg
QLE G4 240x237mm 1250lm 840 ADV QTY4 (includes 4 square LED modules)	**89602618**	4,000 K	–	0.740 kg

[⑥] Orders only in full carton quantities.

Specific technical data

Type[4]	Photo-metric code	Typ. luminous flux at tp = 25 °C[5]	Typ. luminous flux at tp = 45 °C[5]	Typ. forward current	Min. forward voltage at tp = 45 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 45 °C[5]	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 250 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	970 lm	940 lm	250 mA	21.4 V	23.2 V	5.5 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,030 lm	1,000 lm	250 mA	21.4 V	23.2 V	5.5 W	185 lm/W	183 lm/W	168 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,030 lm	1,000 lm	250 mA	21.4 V	23.2 V	5.5 W	185 lm/W	183 lm/W	168 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,030 lm	1,000 lm	250 mA	21.4 V	23.2 V	5.5 W	185 lm/W	183 lm/W	168 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	1,940 lm	1,890 lm	250 mA	42.7 V	46.4 V	11.0 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	2,070 lm	2,010 lm	250 mA	42.7 V	46.4 V	11.0 W	185 lm/W	183 lm/W	168 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	2,070 lm	2,010 lm	250 mA	42.7 V	46.4 V	11.0 W	185 lm/W	183 lm/W	168 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	2,070 lm	2,010 lm	250 mA	42.7 V	46.4 V	11.0 W	185 lm/W	183 lm/W	168 lm/W	> 80
Operating mode HE at 275 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,070 lm	1,040 lm	275 mA	21.7 V	23.3 V	6.1 W	172 lm/W	170 lm/W	156 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,140 lm	1,100 lm	275 mA	21.7 V	23.3 V	6.1 W	183 lm/W	181 lm/W	167 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,140 lm	1,100 lm	275 mA	21.7 V	23.3 V	6.1 W	183 lm/W	181 lm/W	167 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,140 lm	1,100 lm	275 mA	21.7 V	23.3 V	6.1 W	183 lm/W	181 lm/W	167 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	2,130 lm	2,070 lm	275 mA	42.8 V	46.7 V	12.2 W	172 lm/W	170 lm/W	156 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	2,270 lm	2,210 lm	275 mA	42.8 V	46.7 V	12.2 W	183 lm/W	181 lm/W	167 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	2,270 lm	2,210 lm	275 mA	42.8 V	46.7 V	12.2 W	183 lm/W	181 lm/W	167 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	2,270 lm	2,210 lm	275 mA	42.8 V	46.7 V	12.2 W	183 lm/W	181 lm/W	167 lm/W	> 80
Operating mode NM at 300 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,160 lm	1,130 lm	300 mA	21.6 V	23.5 V	6.7 W	170 lm/W	168 lm/W	155 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,240 lm	1,200 lm	300 mA	21.6 V	23.5 V	6.7 W	181 lm/W	179 lm/W	165 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,240 lm	1,200 lm	300 mA	21.6 V	23.5 V	6.7 W	181 lm/W	179 lm/W	165 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,240 lm	1,200 lm	300 mA	21.6 V	23.5 V	6.7 W	181 lm/W	179 lm/W	165 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	2,320 lm	2,250 lm	300 mA	43.1 V	47.0 V	13.4 W	170 lm/W	168 lm/W	155 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	2,470 lm	2,400 lm	300 mA	43.1 V	47.0 V	13.4 W	181 lm/W	179 lm/W	165 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	2,470 lm	2,400 lm	300 mA	43.1 V	47.0 V	13.4 W	181 lm/W	179 lm/W	165 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	2,470 lm	2,400 lm	300 mA	43.1 V	47.0 V	13.4 W	181 lm/W	179 lm/W	165 lm/W	> 80
Operating mode NM at 325 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,250 lm	1,220 lm	325 mA	21.7 V	23.7 V	7.3 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,340 lm	1,300 lm	325 mA	21.7 V	23.7 V	7.3 W	179 lm/W	177 lm/W	163 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,340 lm	1,300 lm	325 mA	21.7 V	23.7 V	7.3 W	179 lm/W	177 lm/W	163 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,340 lm	1,300 lm	325 mA	21.7 V	23.7 V	7.3 W	179 lm/W	177 lm/W	163 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	2,510 lm	2,430 lm	325 mA	43.5 V	47.4 V	14.6 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	2,670 lm	2,590 lm	325 mA	43.5 V	47.4 V	14.6 W	179 lm/W	177 lm/W	163 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	2,670 lm	2,590 lm	325 mA	43.5 V	47.4 V	14.6 W	179 lm/W	177 lm/W	163 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	2,670 lm	2,590 lm	325 mA	43.5 V	47.4 V	14.6 W	179 lm/W	177 lm/W	163 lm/W	> 80

[1] Integral measurement over the complete module.

[2] If mounted with M4 screws and plastic washers.

[3] Measured at operating mode HO.

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

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

Specific technical data

Type[4]	Photo-metric code	Typ. luminous flux at tp = 25 °C[5]	Typ. luminous flux at tp = 45 °C[5]	Typ. forward current	Min. forward voltage at tp = 45 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 45 °C[5]	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 HO at 350 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,340 lm	1,300 lm	350 mA	21.8 V	23.8 V	7.9 W	166 lm/W	164 lm/W	151 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,430 lm	1,390 lm	350 mA	21.8 V	23.8 V	7.9 W	177 lm/W	175 lm/W	161 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,430 lm	1,390 lm	350 mA	21.8 V	23.8 V	7.9 W	177 lm/W	175 lm/W	161 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,430 lm	1,390 lm	350 mA	21.8 V	23.8 V	7.9 W	177 lm/W	175 lm/W	161 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	2,690 lm	2,610 lm	350 mA	43.6 V	47.6 V	15.8 W	166 lm/W	164 lm/W	151 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	2,860 lm	2,780 lm	350 mA	43.6 V	47.6 V	15.8 W	177 lm/W	175 lm/W	161 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	2,860 lm	2,780 lm	350 mA	43.6 V	47.6 V	15.8 W	177 lm/W	175 lm/W	161 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	2,860 lm	2,780 lm	350 mA	43.6 V	47.6 V	15.8 W	177 lm/W	175 lm/W	161 lm/W	> 80
Operating mode HO at 400 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,520 lm	1,480 lm	400 mA	22.1 V	24.1 V	9.1 W	163 lm/W	161 lm/W	148 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	1,620 lm	1,570 lm	400 mA	22.1 V	24.1 V	9.1 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	1,620 lm	1,570 lm	400 mA	22.1 V	24.1 V	9.1 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	1,620 lm	1,570 lm	400 mA	22.1 V	24.1 V	9.1 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	3,050 lm	2,960 lm	400 mA	44.1 V	48.1 V	18.3 W	163 lm/W	161 lm/W	148 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	3,240 lm	3,150 lm	400 mA	44.1 V	48.1 V	18.3 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	3,240 lm	3,150 lm	400 mA	44.1 V	48.1 V	18.3 W	174 lm/W	172 lm/W	158 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	3,240 lm	3,150 lm	400 mA	44.1 V	48.1 V	18.3 W	174 lm/W	172 lm/W	158 lm/W	> 80
Operating mode HO at 500 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	1,880 lm	1,820 lm	500 mA	22.6 V	24.6 V	11.7 W	158 lm/W	156 lm/W	144 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	2,000 lm	1,940 lm	500 mA	22.6 V	24.6 V	11.7 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	2,000 lm	1,940 lm	500 mA	22.6 V	24.6 V	11.7 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	2,000 lm	1,940 lm	500 mA	22.6 V	24.6 V	11.7 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	3,760 lm	3,650 lm	500 mA	45.1 V	49.1 V	23.4 W	158 lm/W	156 lm/W	144 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	4,000 lm	3,880 lm	500 mA	45.1 V	49.1 V	23.4 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	4,000 lm	3,880 lm	500 mA	45.1 V	49.1 V	23.4 W	168 lm/W	166 lm/W	153 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	4,000 lm	3,880 lm	500 mA	45.1 V	49.1 V	23.4 W	168 lm/W	166 lm/W	153 lm/W	> 80
Operating mode HO at 650 mA											
QLE G4 240x237mm 1250lm 830 ADV	830/349	2,380 lm	2,310 lm	650 mA	23.0 V	25.0 V	15.5 W	151 lm/W	149 lm/W	137 lm/W	> 80
QLE G4 240x237mm 1250lm 840 ADV	840/349	2,530 lm	2,460 lm	650 mA	23.0 V	25.0 V	15.5 W	161 lm/W	159 lm/W	146 lm/W	> 80
QLE G4 240x237mm 1250lm 850 ADV	850/349	2,530 lm	2,460 lm	650 mA	23.0 V	25.0 V	15.5 W	161 lm/W	159 lm/W	146 lm/W	> 80
QLE G4 240x237mm 1250lm 865 ADV	865/349	2,530 lm	2,460 lm	650 mA	23.0 V	25.0 V	15.5 W	161 lm/W	159 lm/W	146 lm/W	> 80
QLE G4 488x237mm 2500lm 830 ADV	830/349	4,760 lm	4,620 lm	650 mA	45.9 V	50.1 V	30.9 W	151 lm/W	149 lm/W	137 lm/W	> 80
QLE G4 488x237mm 2500lm 840 ADV	840/349	5,070 lm	4,920 lm	650 mA	45.9 V	50.1 V	30.9 W	161 lm/W	159 lm/W	146 lm/W	> 80
QLE G4 488x237mm 2500lm 850 ADV	850/349	5,070 lm	4,920 lm	650 mA	45.9 V	50.1 V	30.9 W	161 lm/W	159 lm/W	146 lm/W	> 80
QLE G4 488x237mm 2500lm 865 ADV	865/349	5,070 lm	4,920 lm	650 mA	45.9 V	50.1 V	30.9 W	161 lm/W	159 lm/W	146 lm/W	> 80

[1] Integral measurement over the complete module.

[2] If mounted with M4 screws and plastic washers.

[3] Measured at operating mode HO.

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

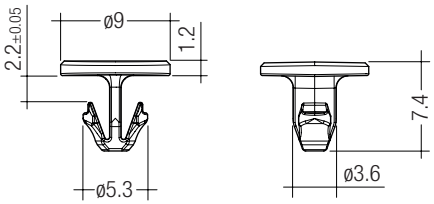
[5] Tolerance range for optical and electrical data: ±10 %.

ACCES-SORIES

CLIP 4.3mm

Product description

- Clip for fixation of LED modules with 4.3 mm holes
- Fast snap on mounting (sheet thickness 0.5 – 1.0 mm)
- For drilling hole 4 mm
- Clip made of Polycarbonat



Ordering data

Type	Article number	Colour	Packaging bag[1]	Weight per pc.
ACL CLIP 4.3mm PUSH-FIX	**28001036**	White	500 pc(s).	0.001 kg

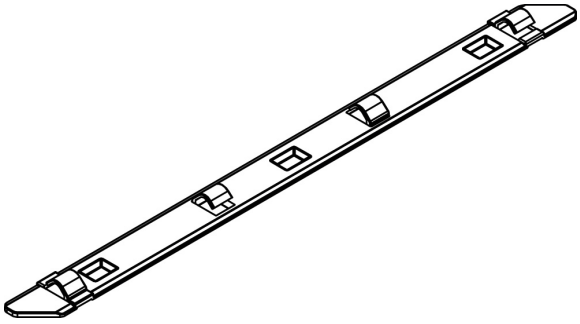
[1] Minimum sales quantity 500 pcs.

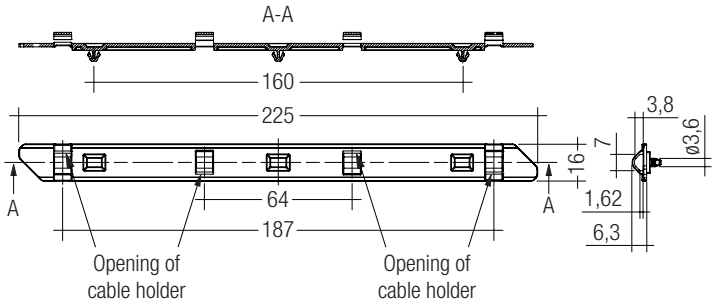
ACCES-SORIES

Mounting bracket

Product description

- For easy and quick fixing of QLE modules
- Fast snap on mounting (sheet thickness 0.5 – 1.0 mm)
- For drilling hole 4 mm
- No tools required for fixing the cable on the bar, for example sensor wiring
- Conducting wires ø1.5 mm for module wiring under the bar
- Clip made of Polycarbonat





Ordering data

Type	Article number	Colour	Packaging carton[1]	Weight per pc.
ACQ MOUNTING BRACKET PUSH-FIX	**28001632**	White	100 pc(s).	0.01 kg

[1] Minimum sales quantity 100 pcs.

1. Standards

IEC 62031
IEC 62471
IEC 61000-4-2

1.1 Photometric code

Key for photometric code, e. g. 830 / 349

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	Energy classification
QLE G4 240x237mm 2500lm 8xx ADV	A++
QLE G4 488x237mm 2500lm 8xx ADV	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 QLE 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 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 QLE will be greatly reduced or the QLE may be destroyed.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

QLE modules 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 QLE modules 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

QLE modules 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 QLE.

With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. Not more than three QLE G4 488x237mm 2500lm ADV or five QLE G4 240x237mm 1250lm ADV are allowed to be connected in parallel.
It is also recommended to use the functionality of the double terminal (internal loop through for parallel wiring) only for two QLE G4 488x237mm 2500lm ADV or three QLE G4 240x237mm 1250lm ADV (see wiring examples).
If a wire breaks or a complete module fails then the current passing through the other module increases. This may reduce its life considerably.

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

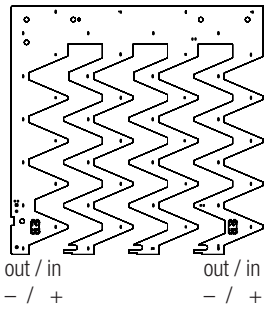
QLE modules are basic isolated up to 320 V (if mounted with M4 screws with head diameter 7 mm in combination with plastic washers) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led control gear (also against earth) is above 320 V, 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.

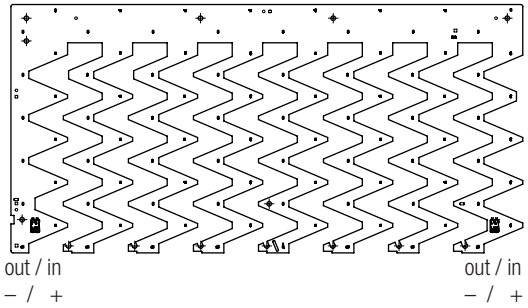
LED Driver for parallel wiring

LED module	Forward current	LCA 45W 500-1400mA one4all SR PRE	LCA 50W 350-1050mA one4all lp PRE	LCA 75W 900-1800mA one4all lp PRE
QLE G4 488x237mm 2500lm ADV	250 mA	1 modul in series x 2 – 3	1 module in series x 2 – 4	1 module in series x 4 – 6
	275 mA	1 module in series x 2 – 3	1 module in series x 2 – 3	1 module in series x 4 – 5
	300 mA	1 module in series x 2 – 3①	1 module in series x 2 – 3①	1 module in series x 3 – 5①
	325 mA	1 module in series x 2①	1 module in series x 2 – 3①	1 module in series x 3 – 4①
	350 mA	1 module in series x 2①	1 module in series x 2①	1 module in series x 3 – 4①
	400 mA	1 module in series x 2①	1 module in series x 2①	1 module in series x 3①
	500 mA	–	1 module in series x 2①	1 module in series x 2 – 3①
	650 mA	–	–	–

① Upgrade of LED Driver is necessary to work reliable at low temperatures for this combination. This will be realised in July 2016.

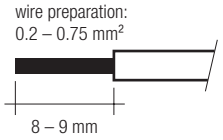
3.2 Wiring





3.3 Wiring type and cross section

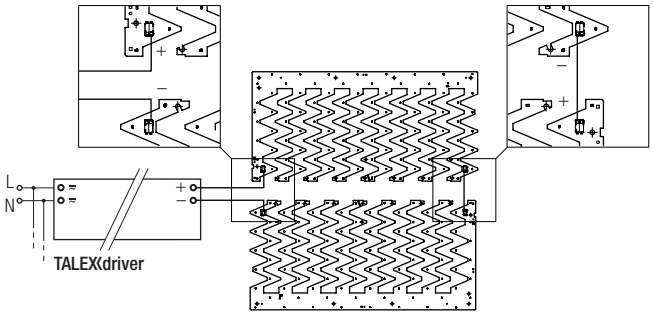
The wiring can be in stranded wires or solid with a cross section of 0.2 to 0.75 mm².
For the push-wire connection you have to strip the insulation (8–9 mm).

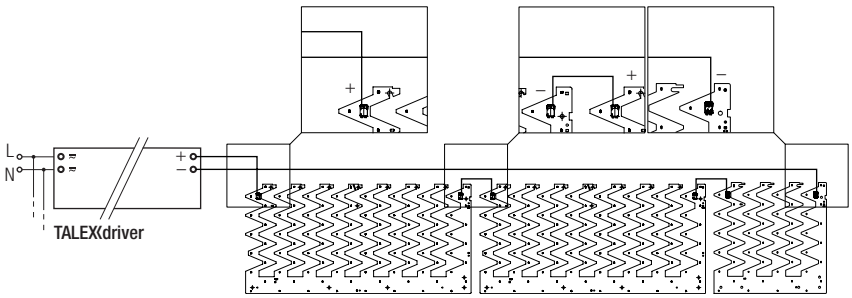


To remove the wires use a suitabel tool (e.g. Microcon release pin) or through twist and pull .

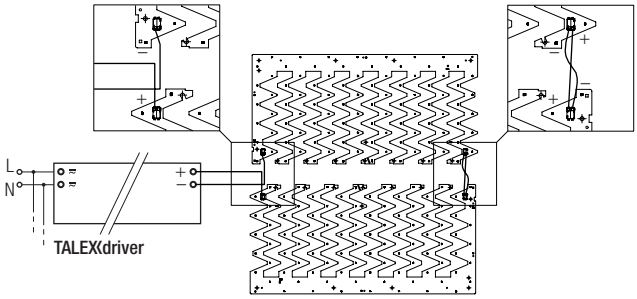
Wiring examples

Serial wiring:





Parallel wiring:

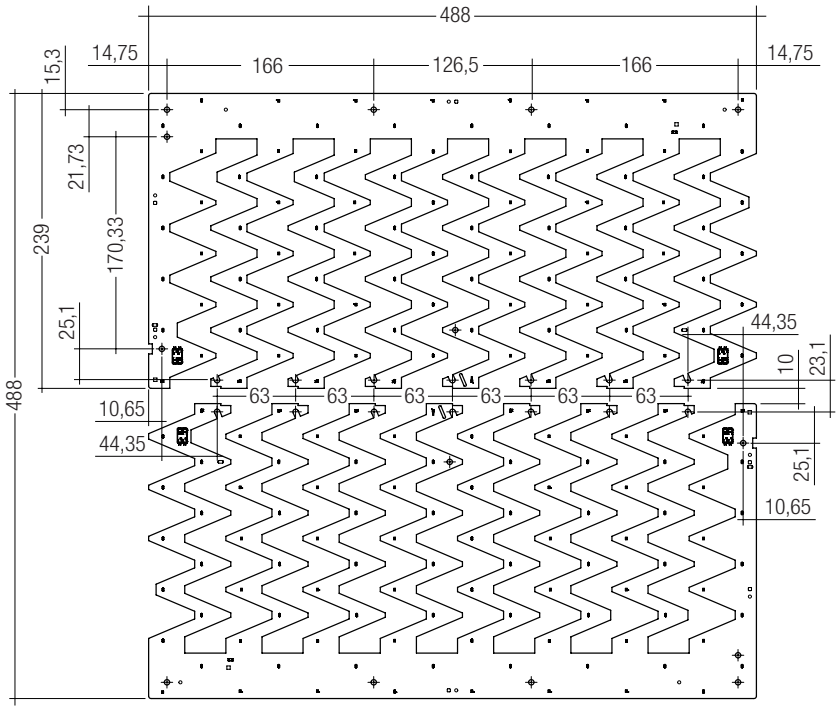


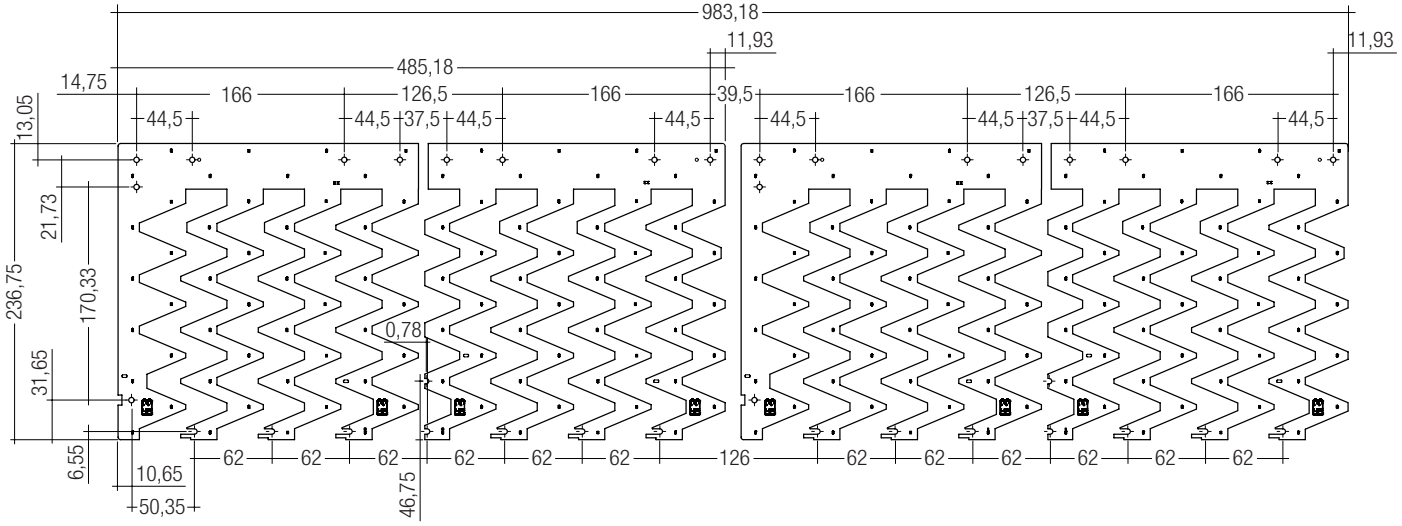
3.4 Mounting instruction

None of the components of the QLE (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 M4 screws or ACL CLIP 4.3mm per module.





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.

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

4.2 Lumen maintenance for QLE

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
250 mA	35 °C	34,000 h	44,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	29,000 h	37,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	32,000 h	52,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	21,000 h	27,000 h	45,000 h	58,000 h	> 60,000 h	> 60,000 h
275 mA	35 °C	34,000 h	44,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	29,000 h	37,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	32,000 h	52,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	21,000 h	27,000 h	45,000 h	58,000 h	> 60,000 h	> 60,000 h
300 mA	35 °C	34,000 h	44,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	28,000 h	37,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	31,000 h	52,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	21,000 h	27,000 h	44,000 h	57,000 h	> 60,000 h	> 60,000 h
325 mA	35 °C	34,000 h	44,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	28,000 h	37,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	31,000 h	51,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	21,000 h	27,000 h	44,000 h	57,000 h	> 60,000 h	> 60,000 h
350 mA	35 °C	33,000 h	43,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	28,000 h	36,000 h	60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	31,000 h	51,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	20,000 h	26,000 h	44,000 h	57,000 h	> 60,000 h	> 60,000 h
400 mA	35 °C	33,000 h	43,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	28,000 h	36,000 h	59,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	24,000 h	31,000 h	51,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	20,000 h	26,000 h	43,000 h	56,000 h	> 60,000 h	> 60,000 h
500 mA	35 °C	32,000 h	42,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	27,000 h	35,000 h	58,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	23,000 h	30,000 h	49,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	20,000 h	26,000 h	42,000 h	55,000 h	> 60,000 h	> 60,000 h
650 mA	35 °C	31,000 h	40,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	45 °C	26,000 h	34,000 h	55,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	55 °C	22,000 h	29,000 h	47,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	65 °C	19,000 h	25,000 h	41,000 h	53,000 h	> 60,000 h	> 60,000 h

Lumen maintenance values are based on LM80 data. Table may be updated when more recent results are available.

4.3 Switching capability

50,000 cycles

Tested according to IEC 62717 Cl 10.3.3
30 s on / 30 s off at Imax

5. Electrical values

5.1 Declaration of electrical parameters

Irated ... Nominal operating current the module is designed for.

Imax ... Max. permissible continuous operating current.

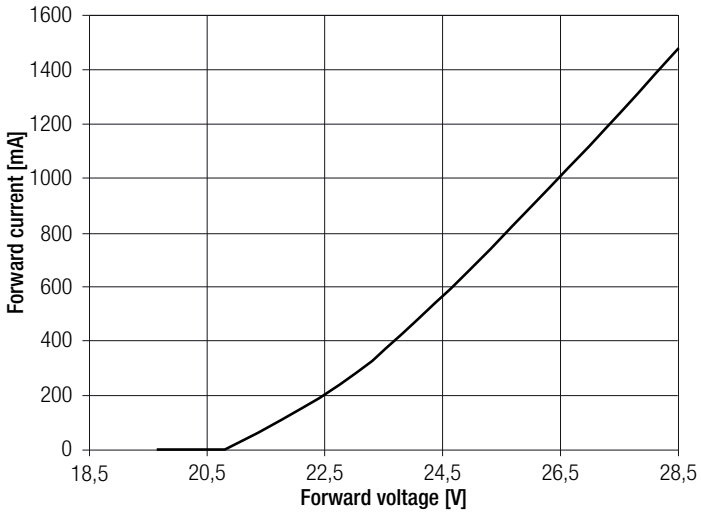
Max. DC forward current ... Max. permissible continuous operating current incl. The tolerances of the LED driver. LED module may be destroyed if this value is exceeded.

Max. permissible LF current ripple ... Max. output current of the LED driver incl. Tolerances and LF current ripple must not exceed this value.

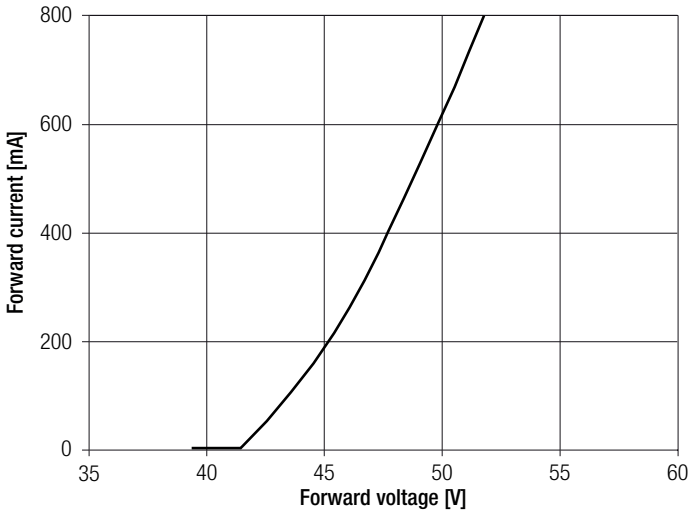
Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

5.2 Typ. forward voltage vs. forward current

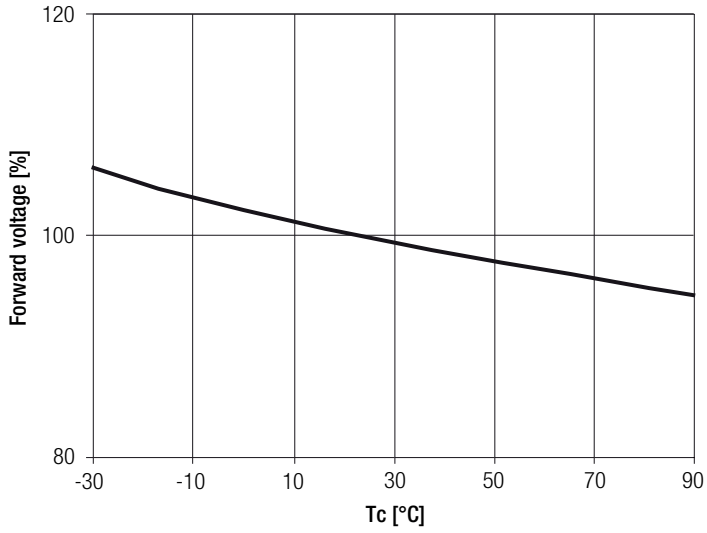
QLE G4 240x237mm 1250lm xxx ADV



QLE G4 488x237mm 2500lm xxx ADV



5.2 Forward voltage vs. tp temperature



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

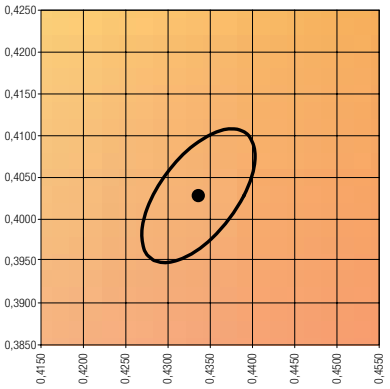
6. Photometric charcteristics

6.1 Coordinates and tolerances according to CIE 1931

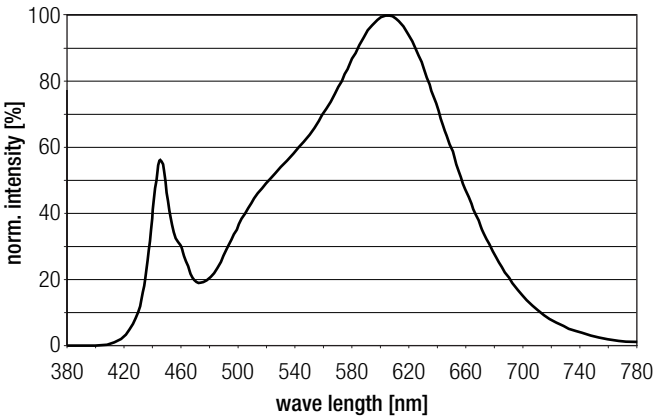
The specified colour coordinates are measured integral by a current impulse of 325 mA and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4339	0.4032

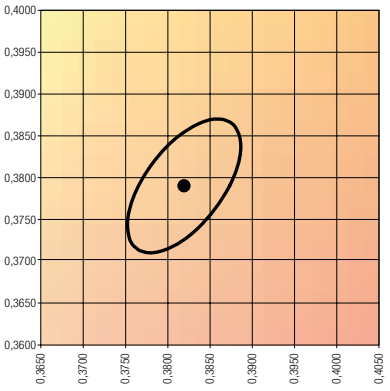


MacAdam Ellipse: 3SDCM

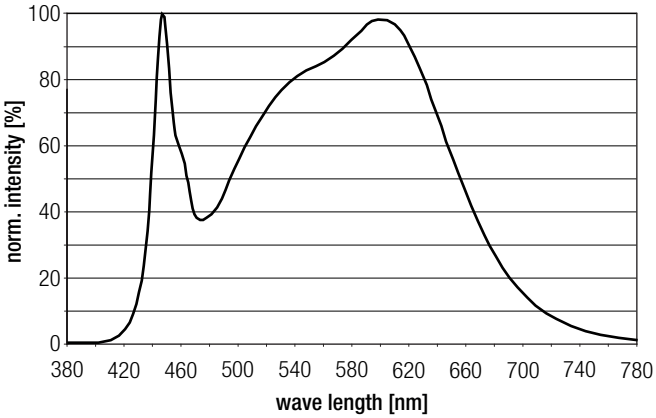


4,000 K

	x0	y0
Centre	0.3818	0.3796

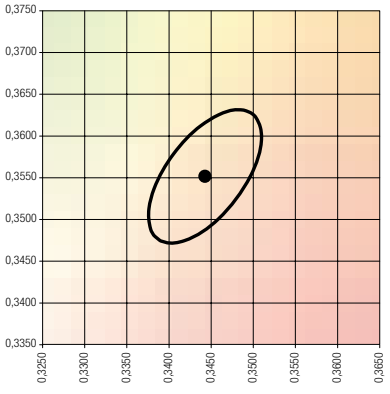


MacAdam Ellipse: 3SDCM

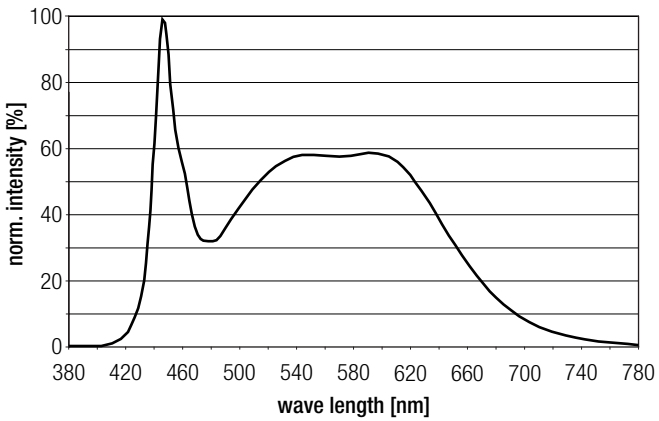


5,000 K

	x0	y0
Centre	0.3446	0.3551

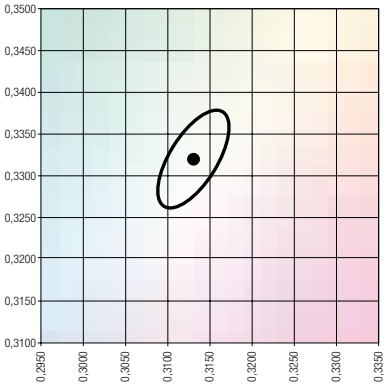


MacAdam Ellipse: 3SDCM

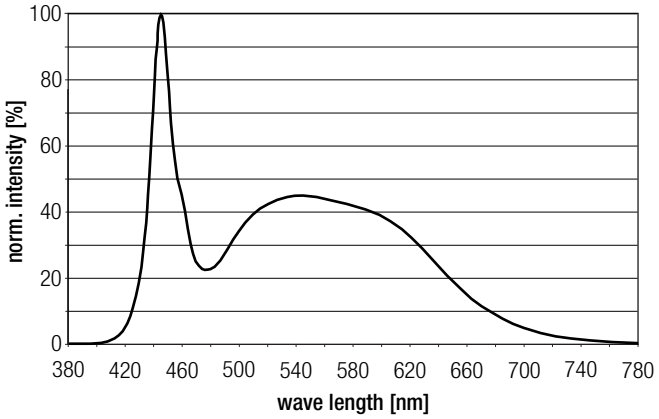


6,500 K

	x0	y0
Centre	0.3129	0.3321

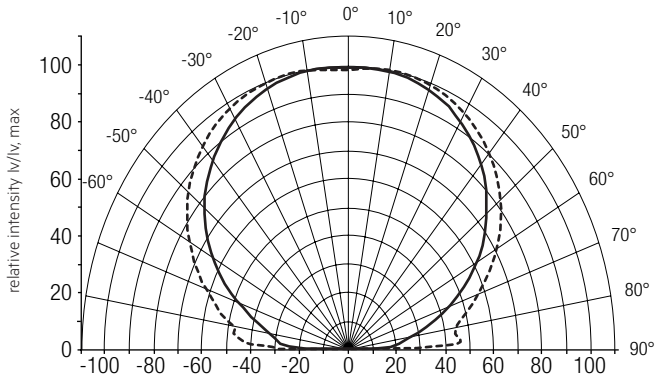


MacAdam Ellipse: 3SDCM



6.2 Light distribution

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

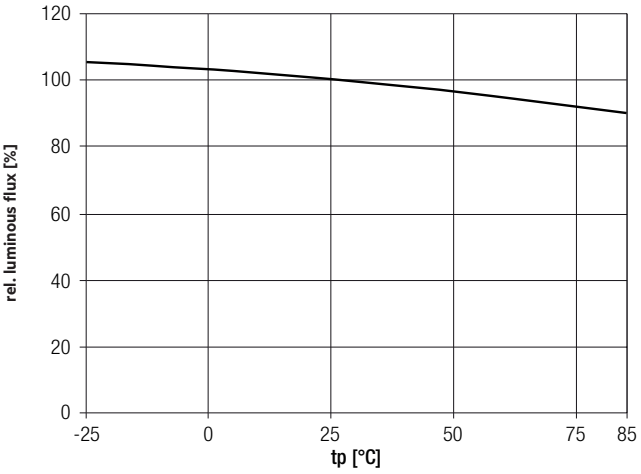


0°
90°

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 homogenious light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 6 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