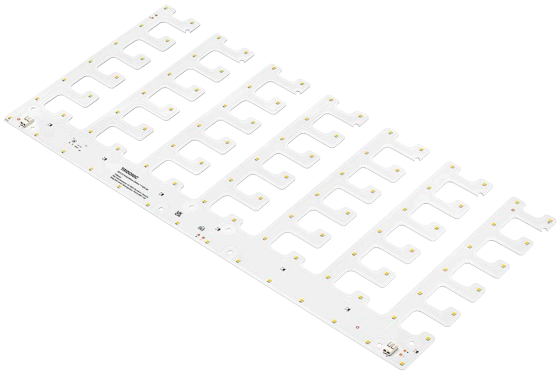
Module QLE G3 520x246mm 2500lm ADV-SE

Modules QLE advanced



Product description

- Ideal for linear and panel lights
- Perfectly uniform light, even if several LED modules are used together in a line
- Self cooling (no additional heat sink required)
- Push terminals for quick and simple wiring of LED module to LED module
- Min. order quantity: 2 pcs. (one package contains 2 modules)
- Long lifetime: 60,000 hours
- 5 years guarantee (conditions at www.tridonic.com)

Optical properties

- Colour temperatures 3,000, 4,000, 5,000 and 6,500 K
- Useful luminous flux 2,490 lm at Irated and tp = 25 °C
- Efficacy of the LED module 181 lm/W at Irated and tp = 25 °C
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3①
- Small luminous flux tolerances

Mechanical properties

- Module dimension 520 x 246 mm
- Simple installation (e.g. screws)

Standards, page 5

Colour temperatures and tolerances, page 10

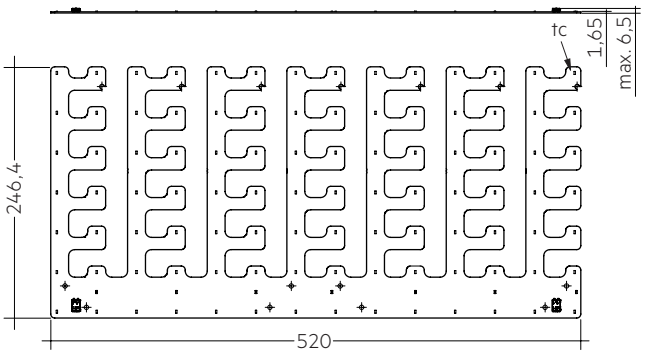
Module QLE G3 520x246mm 2500lm ADV-SE

Modules QLE advanced

Technical data

Colour consistancy[1]	3 SDCM
ESD classification	severity level 1
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	up to 60,000 h
Guarantee	5 year(s)

[1] Integral measurement over the complete module.



Details see 3.4 Mounting instructions

Ordering data

Type	Article number	Packaging carton	Weight per pc.
QLE G3 520x246mm 2500lm 830 ADV-SE	**28004934**	20 pc(s).	0.187 kg
QLE G3 520x246mm 2500lm 840 ADV-SE	**28004935**	20 pc(s).	0.187 kg
QLE G3 520x246mm 2500lm 850 ADV-SE	**28004936**	20 pc(s).	0.187 kg
QLE G3 520x246mm 2500lm 865 ADV-SE	**28004937**	20 pc(s).	0.187 kg

Photometric data

Type[1]	Colour temperature	Photometric Code[2]	Useful luminous flux at tp = 25 °C[3]	Luminous flux at tp rated[4]			Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Beam characteristic	Colour rendering index CRI
				Min.	Typ.	Max.				
Operating mode HE										
QLE G3 520x246mm 2500lm 830 ADV-SE	3.000 K	830/359	–	1,820 lm	2,030 lm	2,230 lm	–	176 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 840 ADV-SE	4.000 K	840/359	–	1,960 lm	2,180 lm	2,400 lm	–	189 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 850 ADV-SE	5.000 K	850/359	–	1,960 lm	2,180 lm	2,400 lm	–	189 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 865 ADV-SE	6.500 K	865/359	–	1,940 lm	2,160 lm	2,380 lm	–	188 lm/W	120°	> 80
Operating mode NM										
QLE G3 520x246mm 2500lm 830 ADV-SE	3.000 K	830/359	2,220 lm	2,120 lm	2,360 lm	2,590 lm	162 lm/W	174 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 840 ADV-SE	4.000 K	840/359	2,490 lm	2,270 lm	2,530 lm	2,780 lm	181 lm/W	187 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 850 ADV-SE	5.000 K	850/359	2,490 lm	2,270 lm	2,530 lm	2,780 lm	181 lm/W	187 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 865 ADV-SE	6.500 K	865/359	2,480 lm	2,260 lm	2,510 lm	2,770 lm	180 lm/W	186 lm/W	120°	> 80
Operating mode HO										
QLE G3 520x246mm 2500lm 830 ADV-SE	3.000 K	830/359	–	3,090 lm	3,430 lm	3,780 lm	–	165 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 840 ADV-SE	4.000 K	840/359	–	3,310 lm	3,690 lm	4,050 lm	–	177 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 850 ADV-SE	5.000 K	850/359	–	3,310 lm	3,690 lm	4,050 lm	–	177 lm/W	120°	> 80
QLE G3 520x246mm 2500lm 865 ADV-SE	6.500 K	865/359	–	3,290 lm	3,660 lm	4,030 lm	–	175 lm/W	120°	> 80

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

[2] The detailed explanation, see data sheet section 1.1.

[3] Tolerance of useful light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %.

[4] Measurement uncertainty ± 10 %. Based on calculation.

Electrical data

Type[1]	Forward current	Min. forward voltage at tp rated	Typ. forward voltage at tp rated	Max. forward voltage at tp = 25 °C	Power consumption Pon at tp = 25 °C[2]	Energy classification	Energy consumption	Type of light source
Operating mode HE								
QLE G3 520x246mm 2500lm 830 ADV-SE	300 mA	33.2 V	38.4 V	40.0 V	–	–	–	–
QLE G3 520x246mm 2500lm 840 ADV-SE	300 mA	33.2 V	38.4 V	40.0 V	–	–	–	–
QLE G3 520x246mm 2500lm 850 ADV-SE	300 mA	33.2 V	38.4 V	40.0 V	–	–	–	–
QLE G3 520x246mm 2500lm 865 ADV-SE	300 mA	33.2 V	38.4 V	40.0 V	–	–	–	–
Operating mode NM								
QLE G3 520x246mm 2500lm 830 ADV-SE	350 mA	33.5 V	38.7 V	40.4 V	13.7 W	D	14 kWh / 1,000 h	non-directional
QLE G3 520x246mm 2500lm 840 ADV-SE	350 mA	33.5 V	38.7 V	40.4 V	13.7 W	C	14 kWh / 1,000 h	non-directional
QLE G3 520x246mm 2500lm 850 ADV-SE	350 mA	33.5 V	38.7 V	40.4 V	13.7 W	C	14 kWh / 1,000 h	non-directional
QLE G3 520x246mm 2500lm 865 ADV-SE	350 mA	33.5 V	38.7 V	40.4 V	13.7 W	C	14 kWh / 1,000 h	non-directional
Operating mode HO								
QLE G3 520x246mm 2500lm 830 ADV-SE	525 mA	34.5 V	39.8 V	41.4 V	–	–	–	–
QLE G3 520x246mm 2500lm 840 ADV-SE	525 mA	34.5 V	39.8 V	41.4 V	–	–	–	–
QLE G3 520x246mm 2500lm 850 ADV-SE	525 mA	34.5 V	39.8 V	41.4 V	–	–	–	–
QLE G3 520x246mm 2500lm 865 ADV-SE	525 mA	34.5 V	39.8 V	41.4 V	–	–	–	–

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

[2] Tolerance of power consumption Pon ± 10 %. Measurement uncertainty ± 5 %.

Specific technical data

Type	Irated	Imax	Max. permissible LF current ripple	Max. permissible peak current / max. pulse width	Max. working voltage for insulation[1]	Electrical strength	ta	tp rated	tc
QLE G3 520x246mm 2500lm 830 ADV-SE	350 mA	660 mA	860 mA	1,400 mA / 10 ms	420 V	1.8 kV	-25 … +45 °C	45 °C	85 °C
QLE G3 520x246mm 2500lm 840 ADV-SE	350 mA	660 mA	860 mA	1,400 mA / 10 ms	420 V	1.8 kV	-25 … +45 °C	45 °C	85 °C
QLE G3 520x246mm 2500lm 850 ADV-SE	350 mA	660 mA	860 mA	1,400 mA / 10 ms	420 V	1.8 kV	-25 … +45 °C	45 °C	85 °C
QLE G3 520x246mm 2500lm 865 ADV-SE	350 mA	660 mA	860 mA	1,400 mA / 10 ms	420 V	1.8 kV	-25 … +45 °C	45 °C	85 °C

[1] If mounted with M4 screws with 7 mm head diameter.

ACCES-SORIES

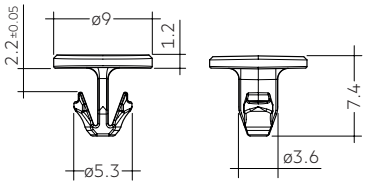
CLIP 4.3mm

Product description

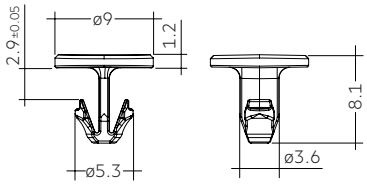
- Clip for fixation of LED modules with 4.3 mm holes
- Fast snap on mounting (sheet thickness 0.5 – 1.0 mm for PUSH-FIX and 1 – 2 mm for PUSH-FIX Long)
- For drilling hole 4 mm
- Clip made of Polycarbonat

ACL CLIP 4.3mm PUSH-FIX

ACL CLIP 4.3mm PUSH-FIX Long



ACL CLIP 4.3mm PUSH-FIX



ACL CLIP 4.3mm PUSH-FIX Long

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
ACL CLIP 4.3mm PUSH-FIX Long	**28002314**	Transparent	500 pc(s).	0.001 kg

[1] Minimum sales quantity 500 pcs.

1. Standards

IEC 62031
IEC 62471
IEC 61000-4-2
IEC 62778
IEC 61547

1.1 Photometric code

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

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 lifetime (max.6000h)	Luminous flux after 25% of the lifetime (max.6000h)	
					Code	Luminous flux
7	70 – 79				7	≥ 70 %
8	80 – 89				8	≥ 80 %
9	≥90				9	≥ 90 %

1.2 Risk group

Forward current	Risk group (IEC 62471)
660 mA (Imax)	RG1

2. Thermal details

2.1 tc point, ambient temperature and lifetime

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

For LLE a tp temperature of 45 °C has to be complied in order to achieve an optimum between heat sink requirements, light output and lifetime.

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 %.

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.

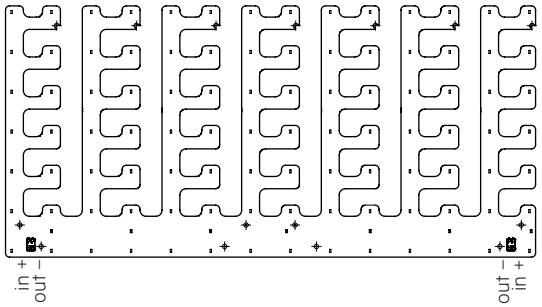
With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. If a wire breaks or a complete module fails then the current passing through the other module increases. This may reduce its life considerably.

The max. permissible output current of the LED driver for parallel wiring is 2.1 A.

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

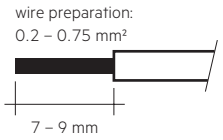
QLE modules are basic insulated up to 420 V (if mounted with M4 screws with head diameter of 7 mm) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led control gear (also against earth) is above 420 V, an additional insulation between 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



3.5 Wiring type and cross section

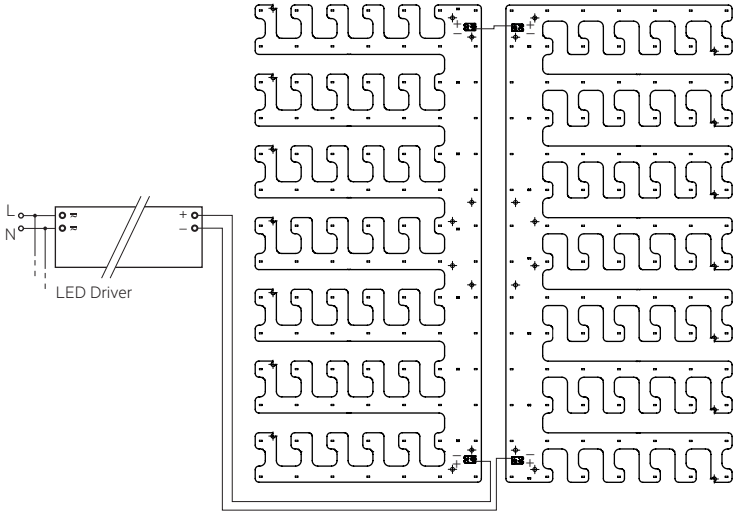
For wiring use stranded wire with ferrules or solid wire from 0.2 to 0.75 mm². For the push-wire connection you have to strip the insulation (7–9 mm).



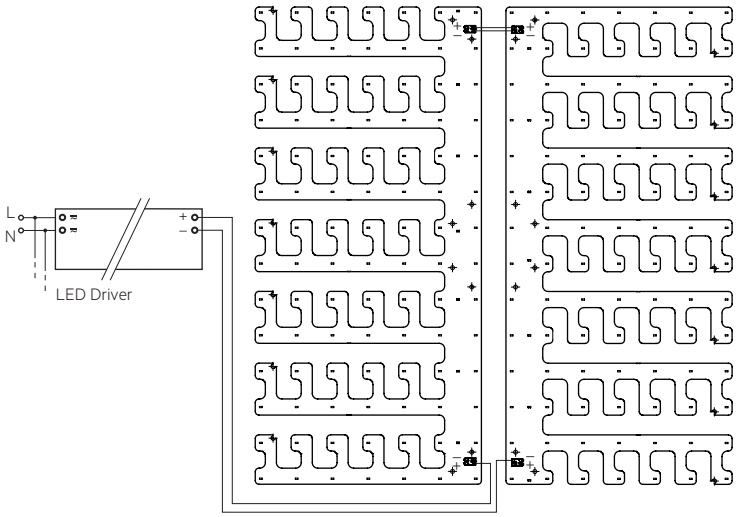
Inserting stranded wires / removing wires by lightly pressing on the push button.

Wiring examples

Serial wiring:



Paralell wiring:



3.4 Mounting instruction

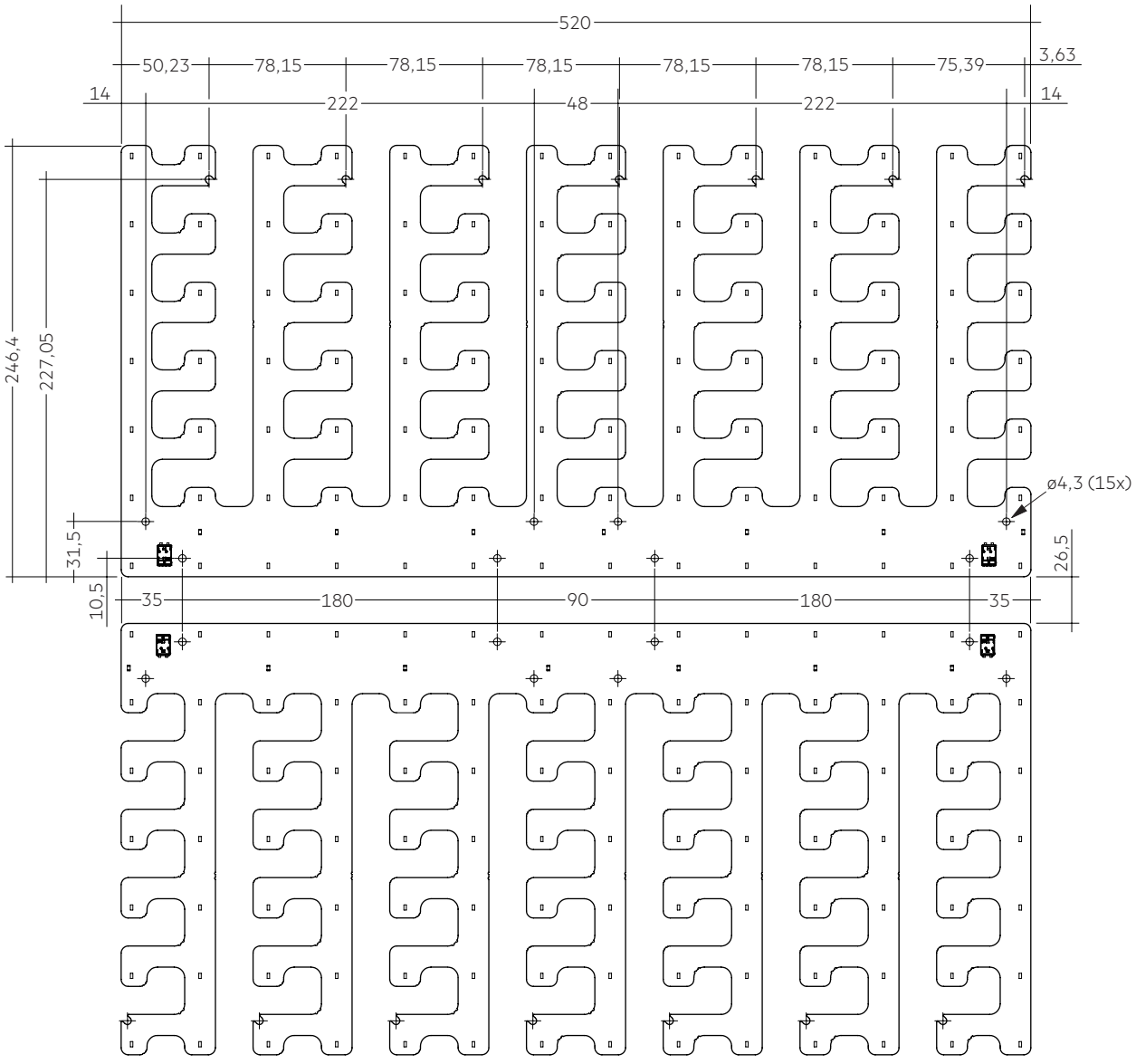
None of the components of the QLE (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

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. Lifetime

4.1 Lifetime, lumen maintenance and failure rate

The light output of an LED module decreases over the lifetime, 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 lifetime 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.

4.2 Lumen maintenance for LLE 24mm HV ADV6

Forward current	tp temperature	L90 / B10	L90 / B50	L80 / B10	L80 / B50	L70 / B10	L70 / B50
350 mA	45 °C	39k h	43k h	>60k h	>60k h	>60k h	>60k h
	55 °C	29k h	33k h	>60k h	>60k h	>60k h	>60k h
	65 °C	29k h	33k h	>60k h	>60k h	>60k h	>60k h
	75 °C	29k h	33k h	>60k h	>60k h	>60k h	>60k h
	85 °C	25k h	28k h	57k h	>60k h	>60k h	>60k h
525 mA	45 °C	33k h	35k h	>60k h	>60k h	>60k h	>60k h
	55 °C	28k h	29k h	59k h	>60k h	>60k h	>60k h
	65 °C	28k h	29k h	59k h	>60k h	>60k h	>60k h
	75 °C	28k h	29k h	59k h	>60k h	>60k h	>60k h
	85 °C	23k h	25k h	49k h	53k h	>60k h	>60k h

4.3 Switching capability

100,000 cycles

Tridonic test according to IEC 62717 Cl 10.3.3
30 s on / 30 s off at a forward current of 700 mA

5. Electrical values

5.1 Declaration of electrical parameters

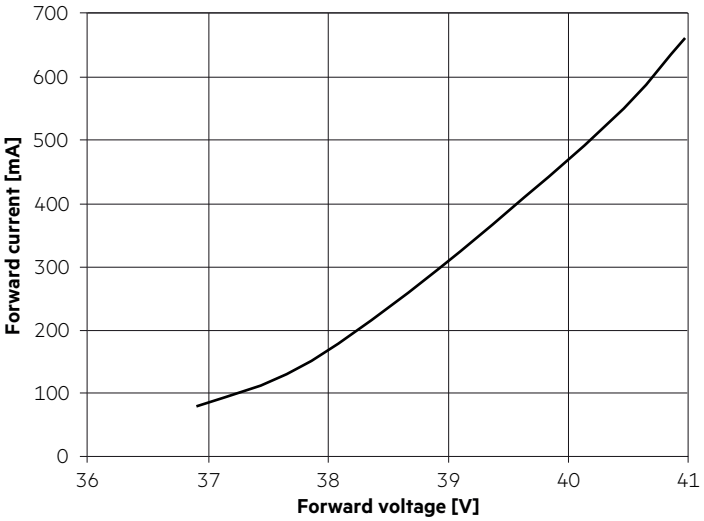
Irated ... Nominal operating current the module is designed for.

Imax ... Max. permissible continuous operating current incl. the tolerances of the LED driver.

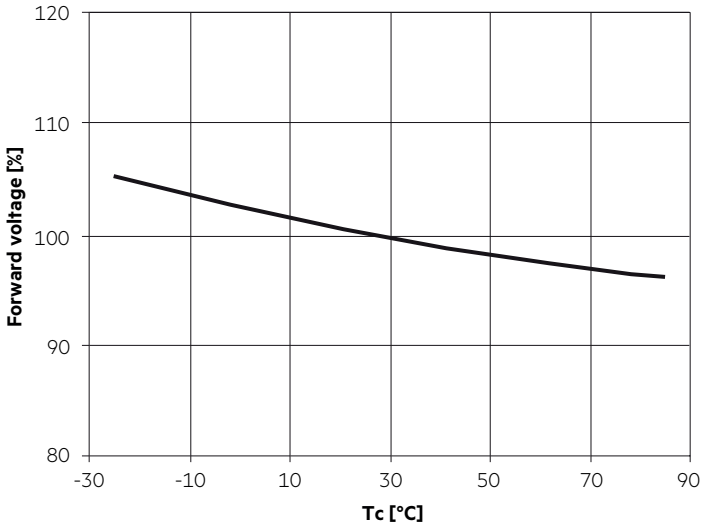
Max. permissible LF current ripple ... Max. output current of the LED driver incl. Tolerances and LF current ripple must not exceed this value.

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



5.2 Forward voltage vs. tp temperature



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

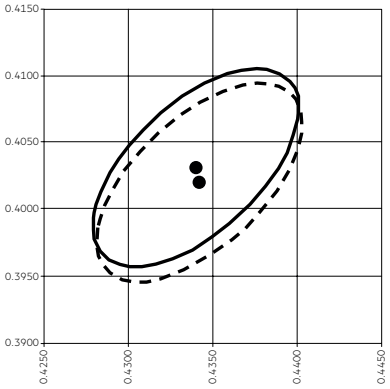
6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

The specified colour coordinates are measured integrally during a current pulse, see table colour coordinates 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.

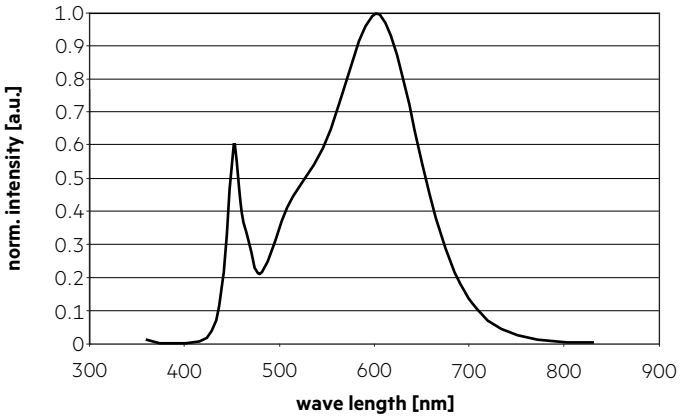
3,000 K

	x0	y0
Centre at 350 mA	0.4341	0.4021
Centre at 1,050 mA	0.4339	0.4032



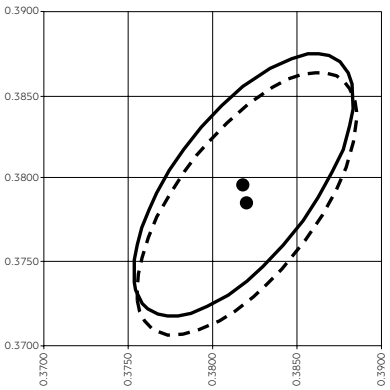
MacAdam Ellipse: 3SDCM (1,050 mA)

MacAdam Ellipse: 3SDCM (350 mA)



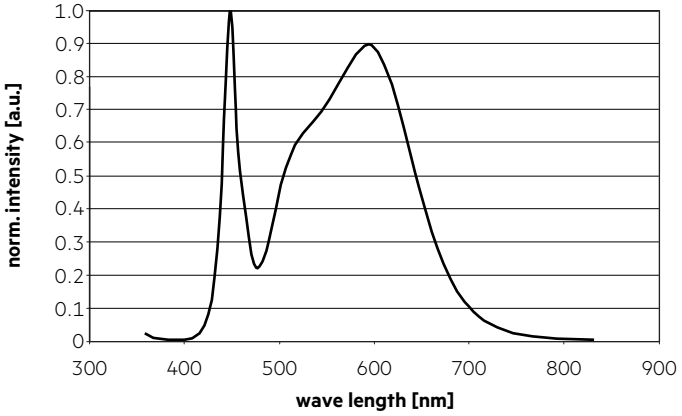
4,000 K

	x0	y0
Centre at 350 mA	0.3820	0.3785
Centre at 1,050 mA	0.3818	0.3796



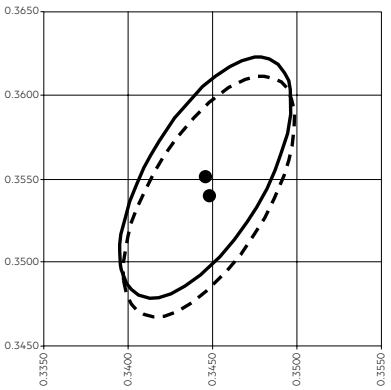
MacAdam Ellipse: 3SDCM (1,050 mA)

MacAdam Ellipse: 3SDCM (350 mA)



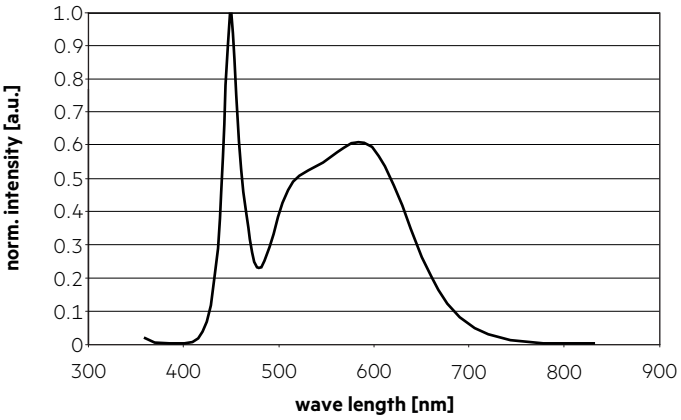
5,000 K

	x0	y0
Centre at 350 mA	0.3448	0.3540
Centre at 1,050 mA	0.3446	0.3551



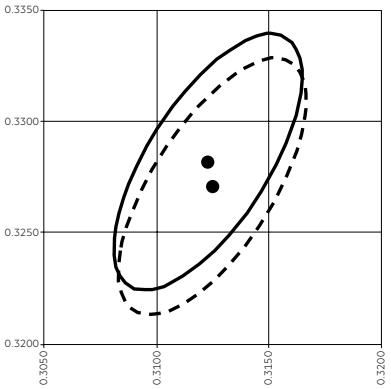
MacAdam Ellipse: 3SDCM (1,050 mA)

MacAdam Ellipse: 3SDCM (350 mA)



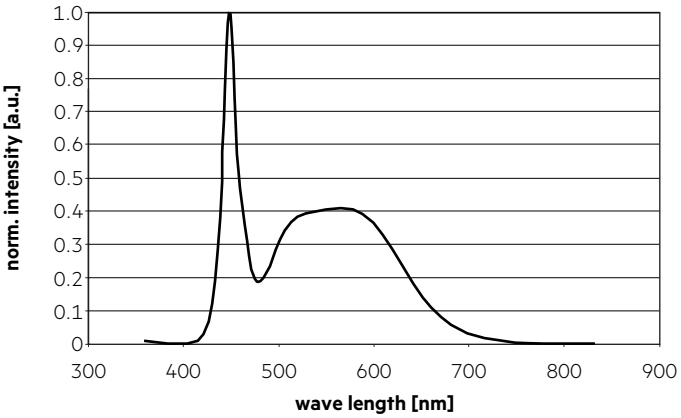
6,500 K

	x0	y0
Centre at 350 mA	0.3125	0.3271
Centre at 1,050 mA	0.3123	0.3282



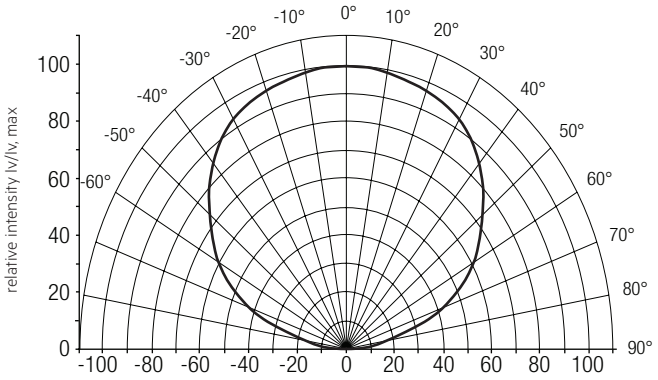
MacAdam Ellipse: 3SDCM (1,050 mA)

MacAdam Ellipse: 3SDCM (350 mA)



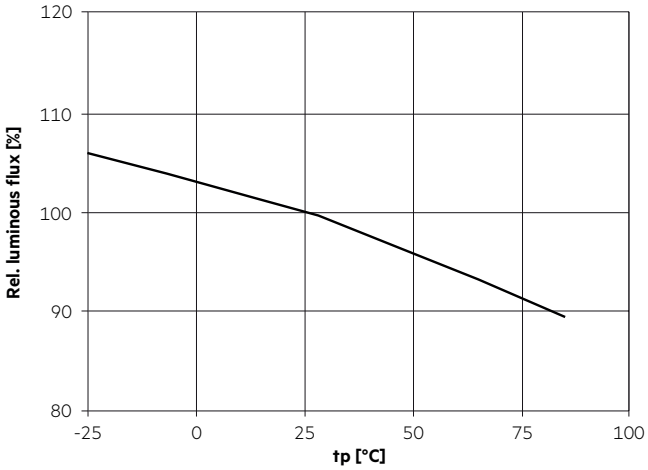
6.2 Light distribution

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

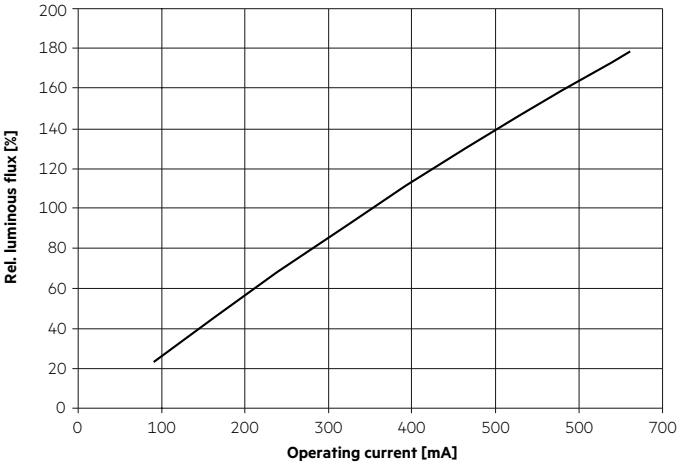


The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 5.
To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 6 cm) should be used.
Designed for typical area luminaires like 600 x 600 mm troffer fittings. Special applications like illuminated ceilings must be evaluated individually.

6.3 Relative luminous flux vs. tc temperature



6.4 Relative luminous flux vs. operating current



7. Miscellaneous

7.1 Additional information

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

Energy label and further information at www.tridonic.com in the certificates tab of the corresponding product page and at the EPREL data base https://eprel.ec.europa.eu/

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim.