



Module QLE PREMIUM

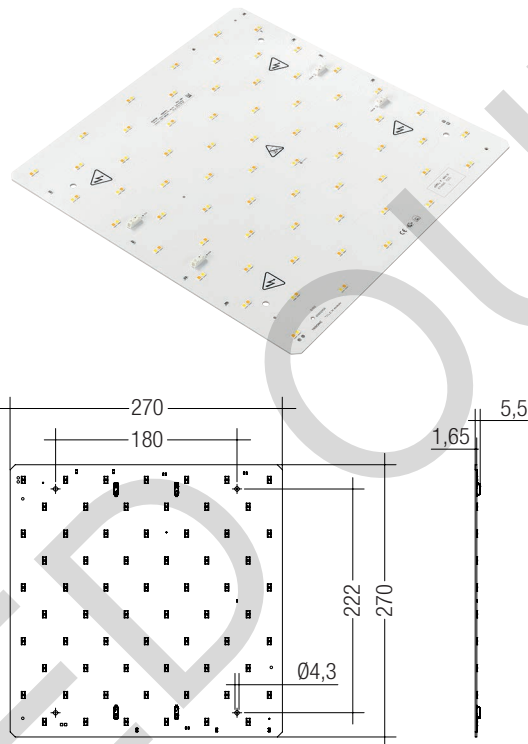
Modules QLE

Product description

- Square Tunable White LED module with 2,700 and 6,500 K SMT packages
- High module efficacy up to 157 lm/W at $t_p = 45^\circ\text{C}$
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3
- Excellent thermal management^①
- Ideal for linear and panel lights
- Long life-time: 50,000 hours
- 5-year guarantee

Technical data

Beam characteristic	120°
Ambient temperature range ^①	-25 ... +55 °C
t_p rated	45 °C
t_c	85 °C
Max. DC forward current ^②	300 mA
Max. permissible LF current ripple	750 mA
Max. permissible peak current	1,200 mA / max. 10 ms
Max. permissible output voltage of LED Driver ^③	500 V
Insulation test voltage	2 kV
ESD classification	severity level 4
Risk group (EN 62471:2008)	1
Type of protection	IPO0



Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pcs.
TW QLE G1 270mm 1250lm 827-865 PRE	89600648	2,700 / 6,500 K	14 pc(s).	0.221 kg



Standards, page 2

Colour temperatures and tolerances, page 4

Specific technical data

Type	Photometric code	Colour temperature	Forward current ^②	Luminous flux at $t_p = 25^\circ\text{C}$ ^④	Luminous flux at $t_p = 45^\circ\text{C}$ ^④	Power consumption module at $t_p = 45^\circ\text{C}$ ^②	Min. forward voltage at $t_p = 45^\circ\text{C}$	Max. forward voltage at $t_p = 25^\circ\text{C}$	Efficacy of the module at $t_p = 25^\circ\text{C}$	Efficacy of the module at $t_p = 45^\circ\text{C}$	Colour rendering index CRI ^⑤
TW QLE G1 270mm 1250lm 827-865 PRE	827/349 – 865/349	2,700 K	250 mA	1,330 lm	1,290 lm	9,1 W	35,1 V	38,2 V	143 lm/W	142 lm/W	> 80
		6,500 K	250 mA	1,460 lm	1,430 lm	9,1 W	35,1 V	38,2 V	157 lm/W	156 lm/W	> 80

^① If the max. temperature limits are exceeded, the life of the system will be greatly reduced or the system may be damaged. The temperature of the LED module at the t_c -point is to be measured in the thermally stable state with a temperature sensor or a temperature sensitive sticker according to EN 60598-1. For the precise position of the t_c point see the above diagram.

^② Tolerance range for electrical data: $\pm 5\%$.

^③ Tolerance range for optical data per channel: $\pm 10\%$.

^④ Colour temperature and CRI according to CIE 1931.

^⑤ Max. DC forward current varies over the temperature of the LED module. See derating curves.

^⑥ If mounted with M3 screws and plastic washers.

^⑦ The LED modules are not designed to operate both channels with the max. current of 250 mA! The current split has to be dimensioned to fulfil the thermal requirements and to reach a t_p , luminous flux for the LED module. For details see page 3 „Electric supply/choice of LED control gear“.

Module QLE PREMIUM

Product description

Standards

IEC 62031
IEC 62471
IEC 61347-1
IEC 61547
IEC 61000-4-6

Photometric code

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

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

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.

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.

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 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.



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>

Storage and humidity

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

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.

Lumen maintenance for QLE

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
		>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
250 mA	45 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	33,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h

Electrical supply/choice of LED Driver

The QLE PREMIUM module is a 2-channel LED module with two different LED packages.
The LED packages have a colour temperature of 2,700 and 6,500 K.
They can be driven independently of each other.
This makes it possible to generate colour temperatures in the intermediate range.
The LED packages can be driven by a DALI DT8 2-channel driver or 2 units of a DALI DT6 Driver.
The data listed in the "specific technical table" (see page 1) apply per channel.

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.

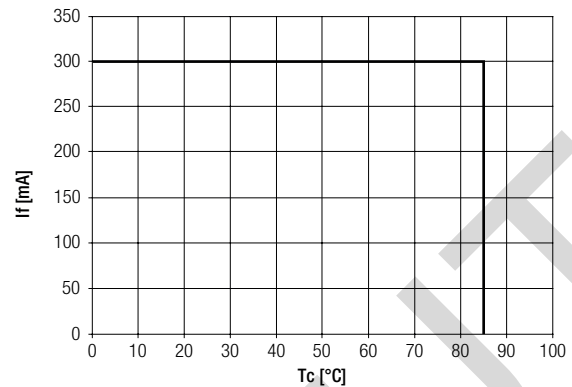
With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. If one module fails, the remaining modules may be overloaded.

Selection of the LED Driver

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

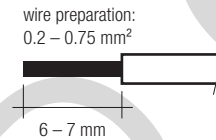
! QLE modules are basic isolated up to 500 V against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 500 V, an additional isolation between LED module and heat sink is required (for example by isolated 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.

2.3 Derating curves



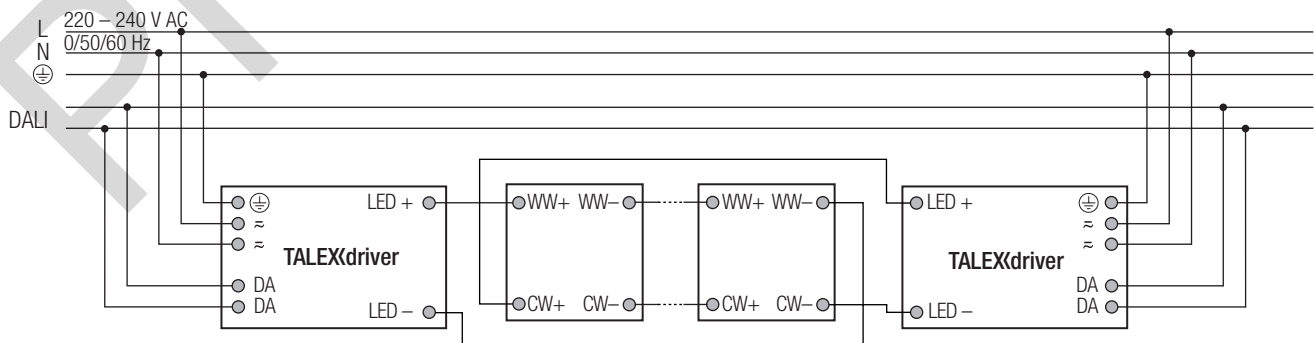
Wiring type and cross section

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.

Wiring diagram DALI for QLE PREMIUM

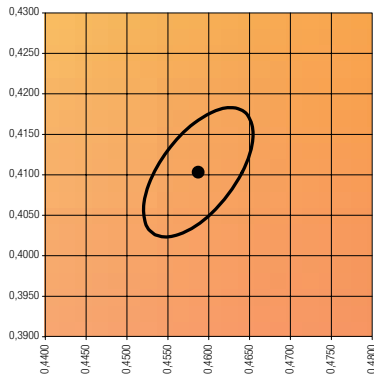


Coordinates and tolerances according to CIE 1931

The specified colour coordinates are central measured by a current impulse with typical values of module and a duration of 100 ms.
The ambient temperature of the measurement is $t_a = 25\text{ }^\circ\text{C}$.
The measurement tolerance of the colour coordinates are ± 0.01 .

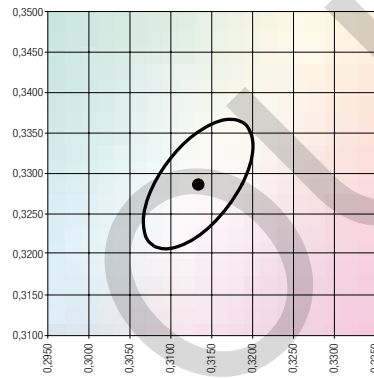
2,700 K		
	x0	y0
Centre	0.4585	0.4104

MacAdam ellipse: 3SDCM

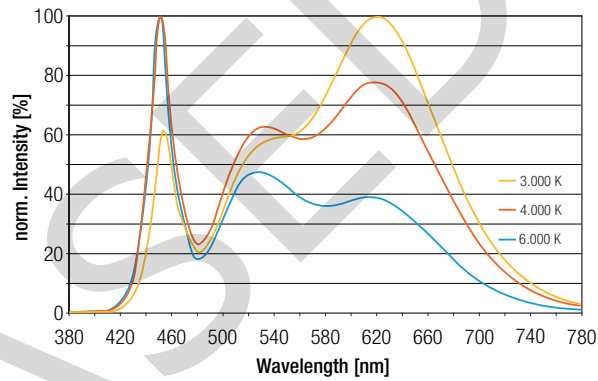


6,500 K		
	x0	y0
Centre	0.3135	0.3284

MacAdam ellipse: 3SDCM



Colour spectrum at different colour temperatures



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.