TRIDONIC

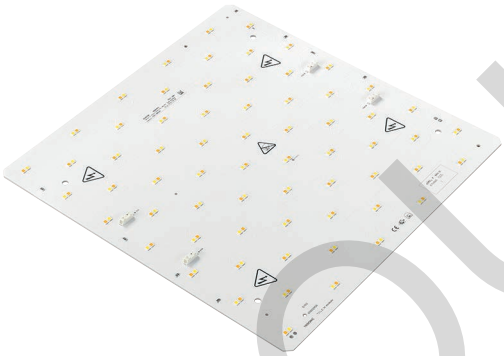
Tunable White
LED linear / area

Module QLE PREMIUM CRI90
QLE PREMIUM

Product description

- Square Tunable White LED module with 2,700 and 6,500 K SMT packages
- High module efficacy up to 150 lm/W at tp = 45 °C
- High colour rendering index CRI > 90
- Small colour tolerance MacAdam 3
- Excellent thermal management
- Ideal for panel lights
- Long life-time: 50,000 hours
- 5-year guarantee

Standards, page 4
Colour temperatures and tolerances, page 6



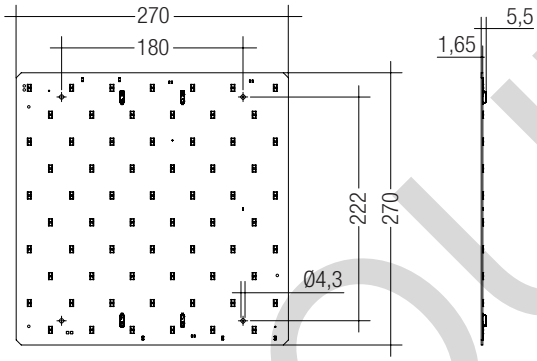
RoHS

Module QLE PREMIUM CRI90

QLE PREMIUM

Technical data

Beam characteristic	120°
Ambient temperature range[3]	-25 … +55 °C
tp rated	45 °C
tc	85 °C
Irated	250 mA
Imax	750 mA
Max. DC forward current	825 mA
Max. permissible LF current ripple	900 mA
Max. permissible peak current	1,200 mA / max. 10 ms
Max. working voltage for insulation[2][4]	500 V
Insulation test voltage	2 kV
CTI of the printed circuit board	≥ 600
ESD classification	severity level 4
Risk group (EN 62471:2008)	0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pcs.
QLE 270mm 1250lm 927-965 PRE	**89602740**	2.700 / 6.500 K	14 pc(s).	0.217 kg

Specific technical data

Type	Channel	Photometric code	Typ. luminous flux at tp = 25 °C[2]	Typ. luminous flux at tp = 45 °C[1]	Typ. forward current[1]	Min. forward voltage at tp = 45 °C[2]	Max. forward voltage at tp = 25 °C[2]	Typ. power consumption at tp = 45 °C[2]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 45 °C	Colour rendering index CRI[3]
QLE 270mm 1250lm 927-965 PRE	WW	827/349	1,270 lm	1,240 lm	250 mA	33.9 V	38.2 V	9.0 W	139 lm/W	137 lm/W	90
	CW	865/349	1,380 lm	1,350 lm	250 mA	33.9 V	38.2 V	9.0 W	152 lm/W	150 lm/W	90

[1] Tolerance range for optical data over the CCT range: ±5 %.

[2] Tolerance range for electrical data: ±5 %.

[3] CRI according to CIE 1931.

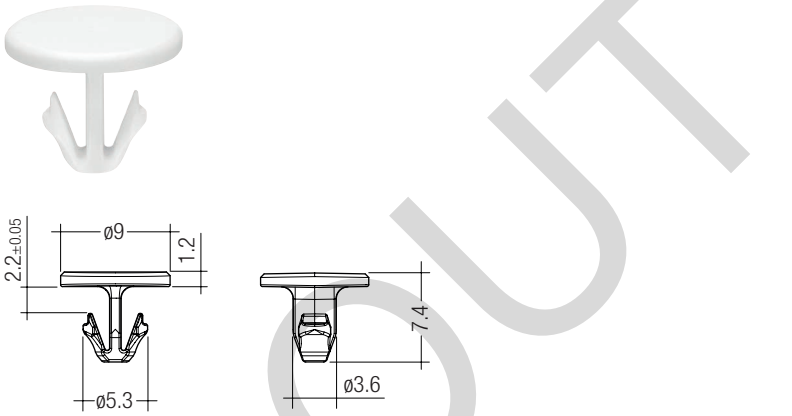
[4] Mounted with non-conductive element like ACL CLIP 4.3mm.

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.

1. Standards

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

1.1 Photometric code

Key for photometric code, e. g. 930 / 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 %

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 TALEXmodule 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 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 QLE will be strongly reduced or or even destroyed.

3. Installation / wiring

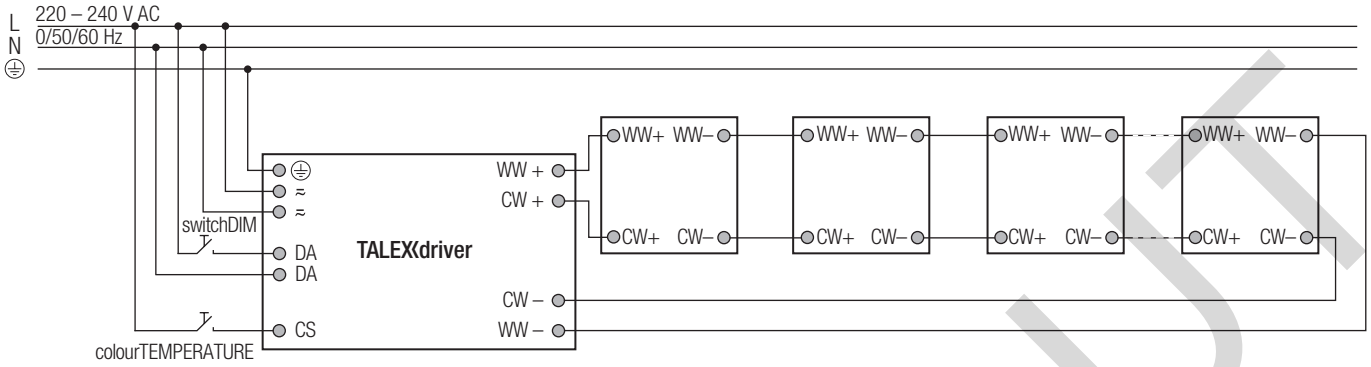
3.1 Electrical supply / choice of LED Driver

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

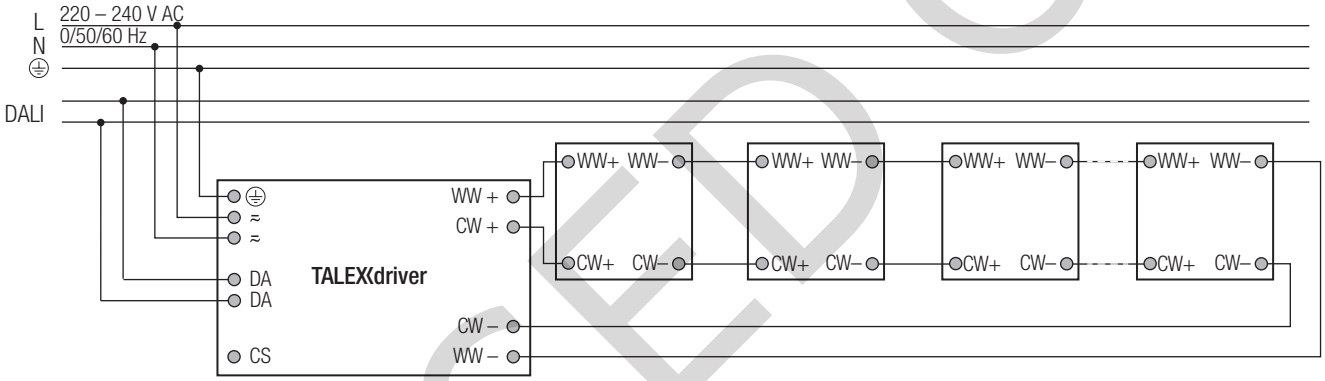
TALEXmodule QLE are basic isolated up to 500 V (mounted with non-conductive element like ACL CLIP 4.3mm) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 500 V, an additional isolation between 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.

3.2 Wiring

Wiring diagram for switchDIM and colourTEMPERATURE for QLE PREMIUM (with 4, 5 or 6 modules)

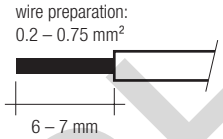


Wiring diagram for DALI for QLE PREMIUM (with 4, 5 or 6 modules)



3.3 Wiring type and cross section

The wiring can be solid cable with a cross section of 0.2 to 0.75 mm².
For the push-wire connection you have to strip the insulation (6–7 mm).



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

3.4 Mounting instruction

None of the components of the 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.

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 have 70 % of its initial luminous flux after the stated operating time. 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 the lumen maintenace may vary over the delivered LED modules.
The B value defines the amount of modules which are below the specific L value, e.g. L70B10 means 10 % of the LED modules are below 70 % of the inital luminous flux, respectivly 90 % will be above 70 % of the initial value. In addition the percentage of failed modules (fatal failure) is characterized by the C value.

The F value is the combination of the B and C value. That means for F degradation and complete failures are considered, e.g. L70F10 means 10 % of the LED modules may fail or be below 70 % of the initial luminous flux.

4.2 Lumen maintenance for QLE

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
250 mA	45 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	55 °C	45,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	24,000 h	>50,000 h	46,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	13,000 h	31,000 h	26,000 h	>50,000 h	39,000 h	>50,000 h

5. Photometric characteristics

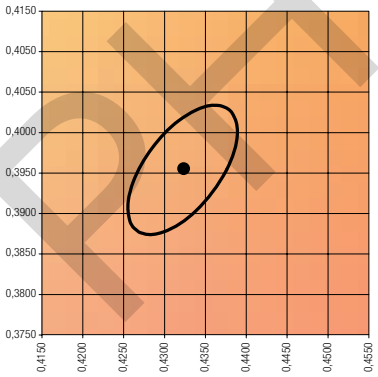
5.1 Coordinates and tolerances according to CIE 1931

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 ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4325	0.3955

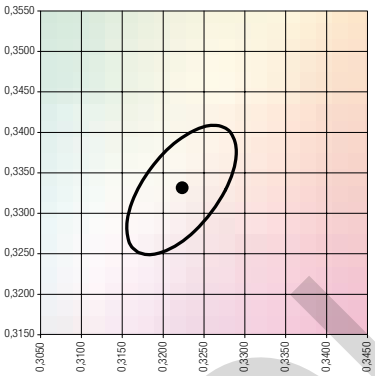
MacAdam ellipse: 3SDCM



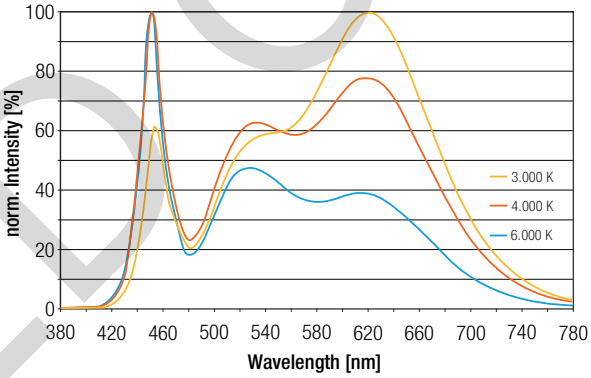
6,000 K

	x0	y0
Centre	0.3220	0.3330

MacAdam ellipse: 3SDCM



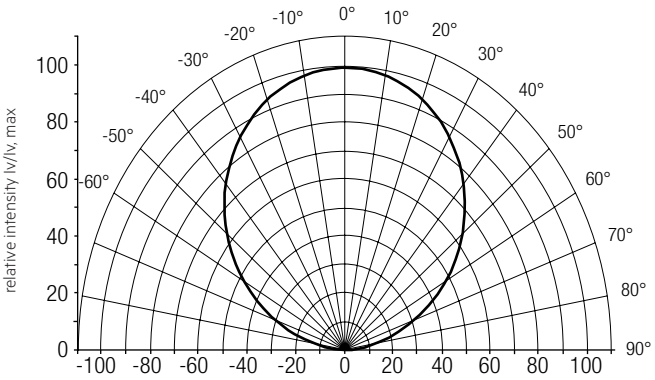
Colour spectrum at different colour temperatures



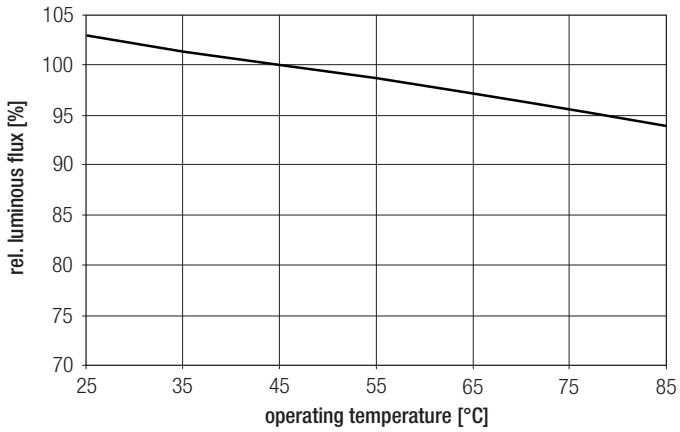
5.2 Light distribution

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

The colour temperature is measured integral over the complete module.
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.



5.3 Relative luminous flux vs. operating temperature



The diagrams are based on statistic values.

6. Miscellaneous

6.1 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.