

## Module QLE G2 premium

QLE premium

### Product description

- Ideal for linear and panel luminaires
- Optimal solution for Tunable White applications together with LCA PRE DT8 or 2 channel low profile LED Drivers
- SELV module – the single module has a forward voltage < 60 V
- Push terminals for quick and simple wiring of LED module to LED module
- Excellent thermal management
- Long life-time: 50,000 hours
- 5-year guarantee

### Optical properties

- Square Tunable White LED module with 2,700 and 6,500 K SMT packages
- Typ. luminous flux of 1,250 lm
- Efficacy of the module up to 168 lm/W at  $t_p = 45^\circ\text{C}$
- High colour rendering index CRI > 90
- Small colour tolerance MacAdam 3
- Small luminous flux tolerances

### Mechanical properties

- Module dimension of 270 x 270 mm (ZHAGA compliant)
- Simple installation (e.g. ACL push fix)



**Standards**, page 4

**Colour temperatures and tolerances**, page 6

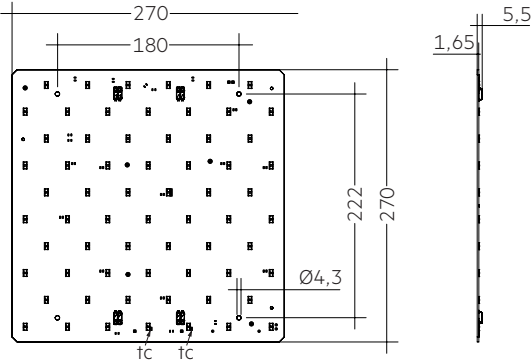




Module QLE G2 premium  
QLE premium

Technical data

Beam characteristic	120°
Ambient temperature range	-25 ... +55 °C
tp rated	45 °C
tc	85 °C
Irated	225 mA
Imax	825 mA
Max. permissible LF current ripple	910 mA
Max. permissible peak current	1,200 mA / max. 10 ms
Max. working voltage for insulation SELV <sup>②③</sup>	60 V
Insulation test voltage	0.5 kV
CTI of the printed circuit board	≤ 600
ESD classification	severity level 1
Risk group (EN 62471:2008)	RG0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pcs.
TW QLE G2 270x270mm 1250lm 927-965 PRE	89602924	2.700 / 6.500 K	10 pc(s).	0.217 kg

Specific technical data

Type	Channel	Photometric code	Typ. luminous flux at tp = 25 °C <sup>①</sup>	Typ. luminous flux at tp = 45 °C <sup>①</sup>	Typ. forward current <sup>①</sup>	Min. forward voltage at tp = 45 °C <sup>②</sup>	Max. forward voltage at tp = 25 °C <sup>②</sup>	Typ. power consumption at tp = 45 °C <sup>②</sup>	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 45 °C	Colour rendering index CRI
TW QLE G2 270x270mm 1250lm 927-965 PRE	WW	927/3x9	1,290 lm	1,250 lm	225 mA	34.9 V	37.9 V	81 W	157 lm/W	154 lm/W	90
	CW	965/3x9	1,400 lm	1,360 lm	225 mA	34.9 V	37.9 V	81 W	169 lm/W	167 lm/W	90

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

② Tolerance range for electrical data: ±5 %.

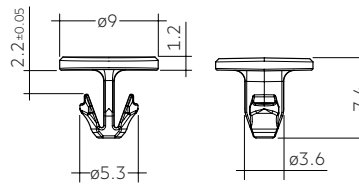
③ Mounted with non-conductive element like ACL CLIP 4.3mm.

#### 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



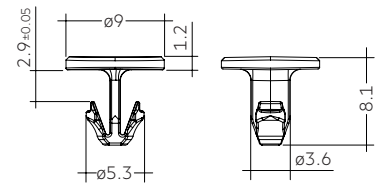
ACL CLIP 4.3mm PUSH-FIX



ACL CLIP 4.3mm PUSH-FIX



ACL CLIP 4.3mm PUSH-FIX Long



ACL CLIP 4.3mm PUSH-FIX Long

#### Ordering data

Type	Article number	Colour	Packaging bag <sup>①</sup>	Weight per pc.
<b>ACL CLIP 4.3mm PUSH-FIX</b>	<b>28001036</b>	White	500 pc(s).	0.001 kg
<b>ACL CLIP 4.3mm PUSH-FIX Long</b>	<b>28002314</b>	Transparent	500 pc(s).	0.001 kg

<sup>①</sup> 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

1 <sup>st</sup> digit	2 <sup>nd</sup> + 3 <sup>rd</sup> digit	4 <sup>th</sup> digit	5 <sup>th</sup> digit	6 <sup>th</sup> 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)
7 70 – 79				Code Luminous flux
8 80 – 89				7 ≥ 70 %
9 ≥90				8 ≥ 80 %
				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 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
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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 even destroyed.

## 3. Installation / wiring

### 3.1 Electrical supply/choice of LED Driver

QLE modules must be operated with SELV LED Drivers.

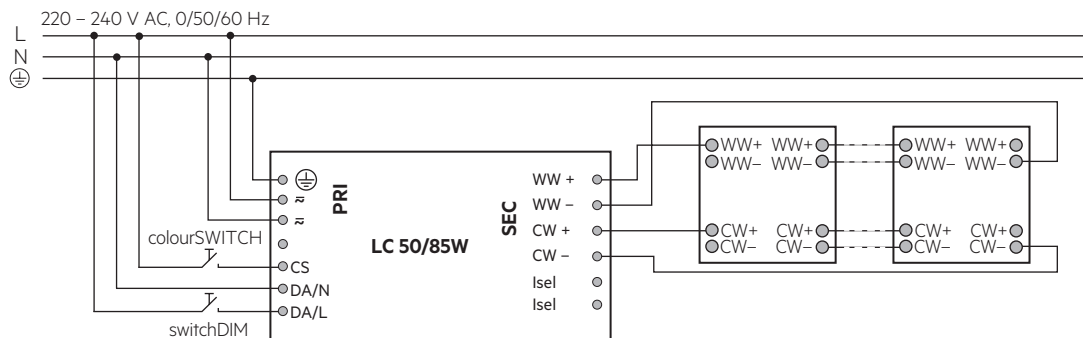


QLE modules are basic insulated up to 60 V SELV against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 60 V SELV, an additional insulation between LED module and heat sink is required (for example by insulated thermal pads) or by a suitable luminaire construction.

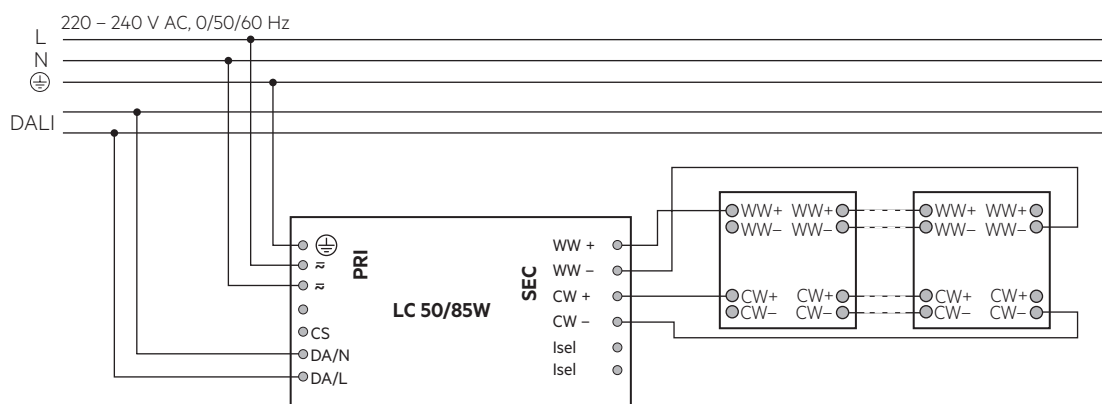
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

### 3.2 Wiring

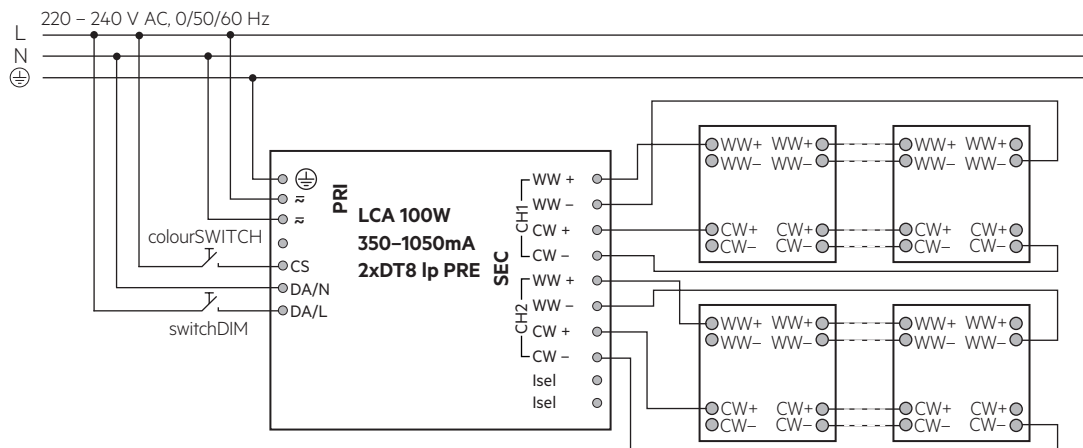
#### Wiring diagram for switchDIM and colourSWITCH for QLE premium (with 2 to 4 modules)



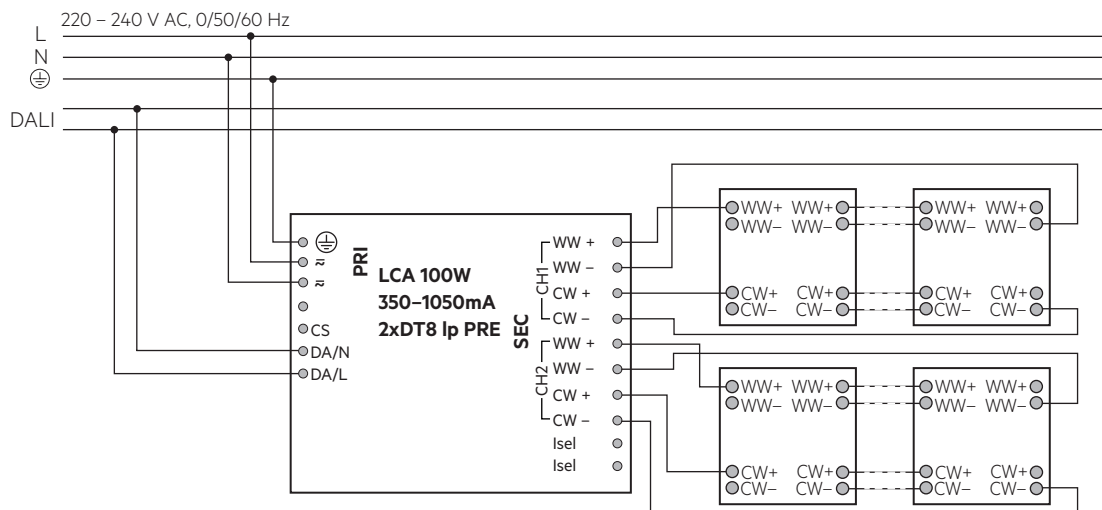
#### Wiring diagram for DALI for QLE premium (with 2 to 4 modules)



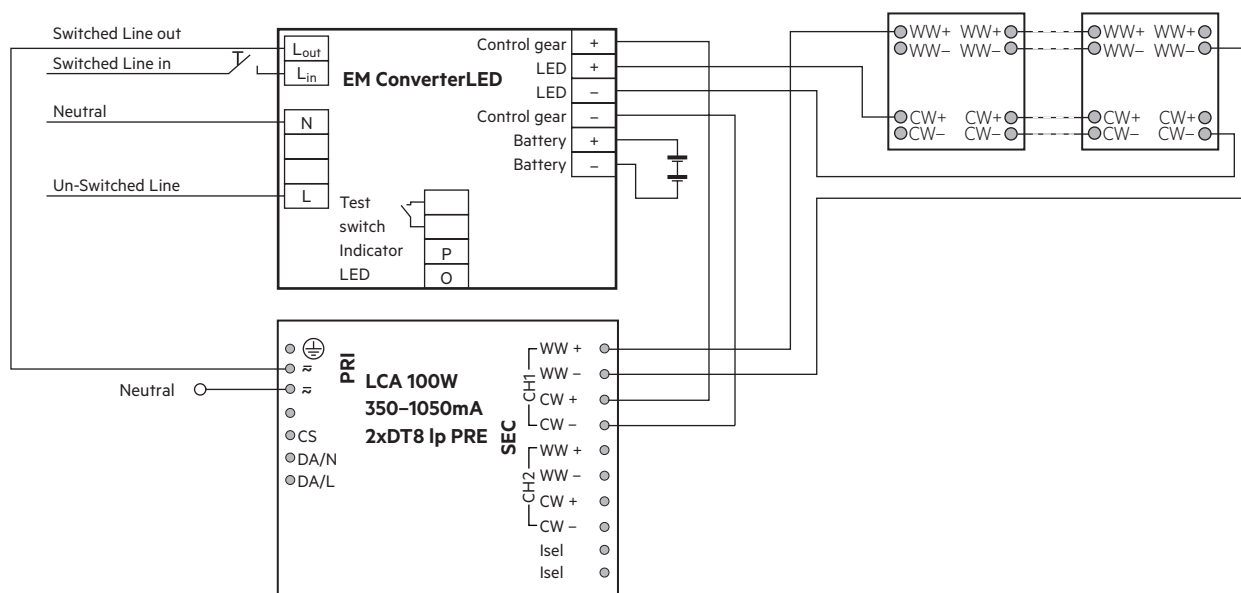
#### Wiring diagram for switchDIM and colourSWITCH for QLE premium (with 4 to 8 modules)



### Wiring diagram for DALI for QLE premium (with 4 to 8 modules)

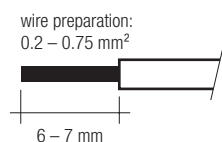


### Wiring diagram for emergency



### 3.3 Wiring type and cross section

The wiring can be solid cable with a cross section of 0.2 to 0.75 mm<sup>2</sup>.  
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 to 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 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 QLE

Forward current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
825 mA	45 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	55 °C	30,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	16,000 h	37,000 h	31,000 h	>50,000 h	46,000 h	>50,000 h
	75 °C	8,500 h	20,000 h	17,000 h	39,000 h	27,000 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 of 325 mA with typical values of module and a duration of 100 ms.

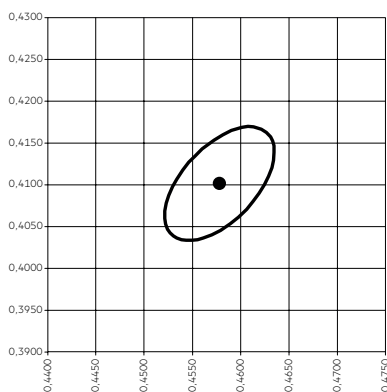
The ambient temperature of the measurement is  $t_a = 25^\circ\text{C}$ .

The measurement tolerance of the colour coordinates are  $\pm 0.01$ .

#### 2,700 K

	x0	y0
Centre	0.4578	0.4101

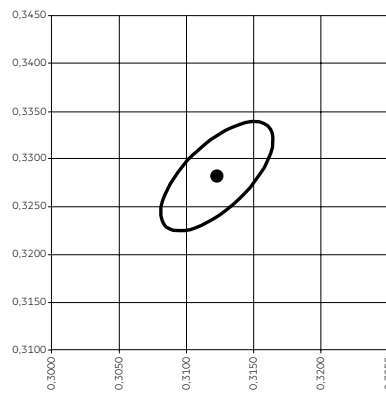
MacAdam ellipse: 3SDCM



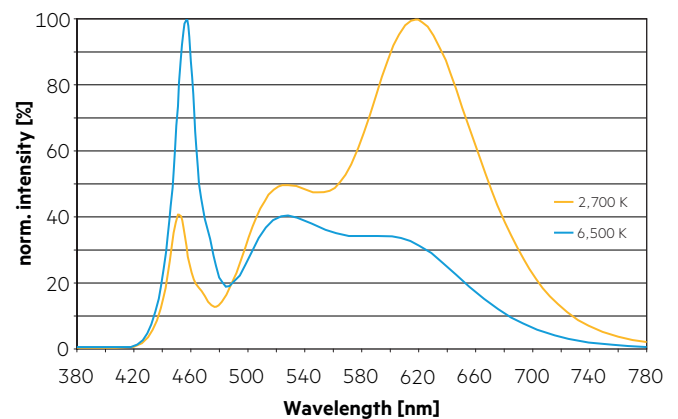
#### 6,500 K

	x0	y0
Centre	0.3123	0.3281

MacAdam ellipse: 3SDCM



### Colour spectrum at different colour temperatures



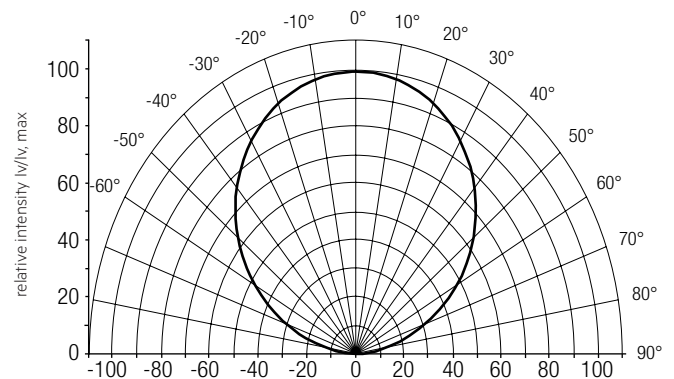
### 5.2 Light distribution

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



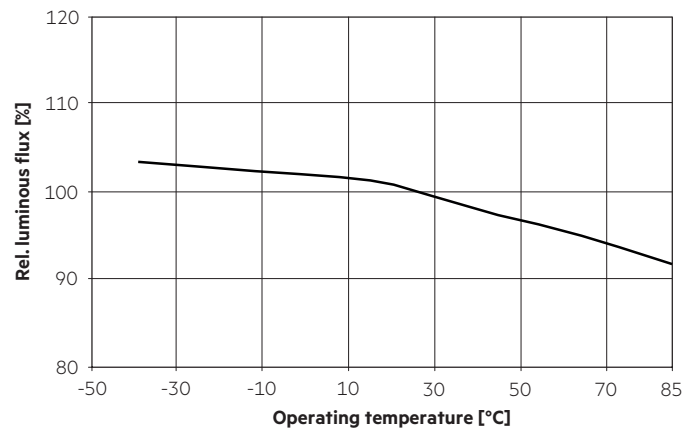
The colour temperature is measured integral over the complete module.

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.



For further information see Design-in Guide, 3D data and photometric data on [www.tridonic.com](http://www.tridonic.com) or on request.

### 5.3 Relative luminous flux vs. operating temperature



The diagrams are based on statistic values.

## 6. Miscellaneous

### 6.1 Additional information

Additional technical information Design-in Guide, 3D data, photometric data and Guarantee conditions at [www.tridonic.com](http://www.tridonic.com)

Guarantee conditions at [www.tridonic.com](http://www.tridonic.com) → Services

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