



Module DLE G3 EXC

Modules DLE

Product description

- For downlights
- Luminous flux up to 3,030 lm at $t_p = 65^\circ\text{C}$
- High efficacy up to 136 lm/W for the LED module at $t_p = 25^\circ\text{C}$
- High system efficacy up to 120 lm/W at $t_p = 65^\circ\text{C}$
- BLO operation mode: Best LED Operation for optimum operation and constant luminous flux at all colour temperatures in combination with Tridonic LED Driver of TOP and ECO series
- High colour consistency (MacAdams 3)
- Fixing holes for M3 screws
- Built-in LED module
- Cooling required
- Flexible operating modes



Standards, page 5

Colour temperatures and tolerances, page 12



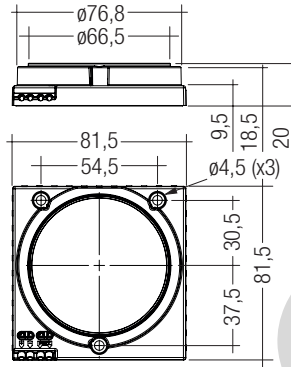


Module DLE G3 EXC

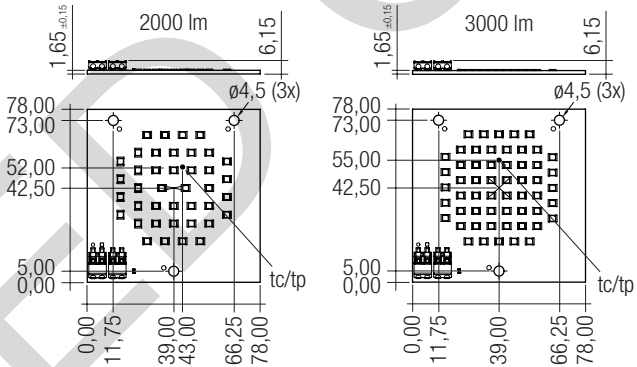
Modules DLE

Technical data

Beam characteristic with housing	80°
Beam characteristic without housing	120°
Ambient temperature range	-20 ... +45 °C
tp rated	65 °C
tc ^①	up to 85 °C
Max. DC forward current for 2,000 lm 930 with housing ^②	750 mA
Max. DC forward current for 2,000 lm 940 with housing ^②	700 mA
Max. DC forward current for 3,000 lm 930 with housing ^②	650 mA
Max. DC forward current for 3,000 lm 940 with housing ^②	600 mA
Max. DC forward current for 2,000 lm 9x0 without housing ^②	1,000 mA
Max. DC forward current for 3,000 lm 9x0 without housing ^②	800 mA
Max. permissible LF current ripple for 2,000 lm	1,500 mA
Max. permissible LF current ripple for 3,000 lm	1,200 mA
Max. permissible peak current for 2,000 lm	3,000 mA / max. 10 µs
Max. permissible peak current for 3,000 lm	2,400 mA / max. 10 µs
Max. permissible output voltage of LED Driver for 2,000 lm ^③	320 V
Max. permissible output voltage of LED Driver for 3,000 lm ^③	320 V
Insulation test voltage for 2,000 lm	1.64 kV
Insulation test voltage for 3,000 lm	1.64 kV
ESD classification	severity level 4
Risk group (EN 62471:2008)	1
Type of protection	IP00



With housing (tc/tp position same as without housing) – Dimensions in mm



Without housing – Dimensions in mm

Ordering data

Type	Article number	Colour temperature	Casing	Packaging	Weight per pc.
DLE G3 65mm 2000lm 930 R EXC	89600574	3,000 K	no	24 pc(s).	0.029 kg
DLE G3 65mm 2000lm 940 R EXC	89600575	4,000 K	no	24 pc(s).	0.029 kg
DLE G3 65mm 3000lm 930 R EXC	89600576	3,000 K	no	24 pc(s).	0.029 kg
DLE G3 65mm 3000lm 940 R EXC	89600577	4,000 K	no	24 pc(s).	0.029 kg
DLE G3 65mm 2000lm 930 H EXC	89600578	3,000 K	yes	10 pc(s).	0.060 kg
DLE G3 65mm 2000lm 940 H EXC	89600579	4,000 K	yes	10 pc(s).	0.060 kg
DLE G3 65mm 3000lm 930 H EXC	89600580	3,000 K	yes	10 pc(s).	0.060 kg
DLE G3 65mm 3000lm 940 H EXC	89600599	4,000 K	yes	10 pc(s).	0.060 kg

Specific technical data

Type ^①	Photometric code	Forward current	Luminous flux at tp = 25 °C ^④	Luminous flux at tp = 65 °C ^④	Power consumption module ^④ ⑥	Min. forward voltage module at tp = 65 °C	Max. forward voltage module at tp = 25 °C	Luminous efficacy module at tp = 25 °C	Luminous efficacy module at tp = 65 °C	Luminous efficacy system at tp = 65 °C ^⑤	Colour rendering index CRI
DLE G3 65mm 2000lm – Module without housing – Operating mode HE											
DLE G3 65mm 2000lm 930 R EXC	930/359	400 mA	1,150 lm	1,100 lm	8.8 W	20.4 V	23.3 V	126 lm/W	125 lm/W	113 lm/W	90
DLE G3 65mm 2000lm 940 R EXC	940/359	375 mA	1,140 lm	1,090 lm	8.2 W	20.4 V	23.2 V	136 lm/W	133 lm/W	120 lm/W	90
DLE G3 65mm 2000lm – Module without housing – Operating mode BLO and HO											
DLE G3 65mm 2000lm 930 R EXC	930/359	750 mA	2,100 lm	2,000 lm	17.2 W	21.3 V	24.2 V	118 lm/W	116 lm/W	105 lm/W	90
DLE G3 65mm 2000lm 940 R EXC	940/359	700 mA	2,080 lm	1,990 lm	15.9 W	21.1 V	24.1 V	126 lm/W	125 lm/W	113 lm/W	90
DLE G3 65mm 3000lm – Module without housing – Operating mode HE											
DLE G3 65mm 3000lm 930 R EXC	930/359	450 mA	2,230 lm	2,130 lm	17.6 W	36.4 V	41.4 V	122 lm/W	121 lm/W	109 lm/W	90
DLE G3 65mm 3000lm 940 R EXC	940/359	400 mA	2,110 lm	2,020 lm	15.6 W	36.3 V	41.3 V	131 lm/W	129 lm/W	117 lm/W	90
DLE G3 65mm 3000lm – Module without housing – Operating mode BLO and HO											
DLE G3 65mm 3000lm 930 R EXC	930/359	650 mA	3,170 lm	3,030 lm	26.3 W	37.5 V	42.7 V	117 lm/W	115 lm/W	104 lm/W	90
DLE G3 65mm 3000lm 940 R EXC	940/359	600 mA	3,110 lm	2,980 lm	24.1 W	37.2 V	42.4 V	125 lm/W	124 lm/W	111 lm/W	90
DLE G3 65mm 2000lm – Module with housing – Operating mode HE											
DLE G3 65mm 2000lm 930 H EXC	930/359	400 mA	985 lm	940 lm	8.8 W	20.4 V	23.3 V	108 lm/W	107 lm/W	96 lm/W	90
DLE G3 65mm 2000lm 940 H EXC	940/359	375 mA	980 lm	940 lm	8.2 W	20.4 V	23.2 V	117 lm/W	115 lm/W	103 lm/W	90
DLE G3 65mm 2000lm – Module with housing – Operating mode BLO and HO											
DLE G3 65mm 2000lm 930 H EXC	930/359	750 mA	1,800 lm	1,720 lm	17.2 W	21.3 V	24.2 V	101 lm/W	100 lm/W	90 lm/W	90
DLE G3 65mm 2000lm 940 H EXC	940/359	700 mA	1,790 lm	1,720 lm	15.9 W	21.1 V	24.1 V	108 lm/W	108 lm/W	97 lm/W	90
DLE G3 65mm 3000lm – Module with housing – Operating mode HE											
DLE G3 65mm 3000lm 930 H EXC	930/359	450 mA	1,920 lm	1,830 lm	17.6 W	36.4 V	41.4 V	105 lm/W	104 lm/W	94 lm/W	90
DLE G3 65mm 3000lm 940 H EXC	940/359	400 mA	1,820 lm	1,740 lm	15.6 W	36.3 V	41.3 V	113 lm/W	112 lm/W	100 lm/W	90
DLE G3 65mm 3000lm – Module with housing – Operating mode BLO and HO											
DLE G3 65mm 3000lm 930 H EXC	930/359	650 mA	2,720 lm	2,600 lm	26.3 W	37.5 V	42.7 V	100 lm/W	99 lm/W	89 lm/W	90
DLE G3 65mm 3000lm 940 H EXC	940/359	600 mA	2,680 lm	2,560 lm	24.1 W	37.2 V	42.5 V	108 lm/W	106 lm/W	96 lm/W	90

① See Derating curves in data sheet section 2.3.

② Max. DC forward current varies over the temperature of the LED module. See derating curves in data sheet section 2.3.

③ The detailed explanation, see data sheet section 3.1.

④ Tolerance range for optical and electrical data: ±10 %.

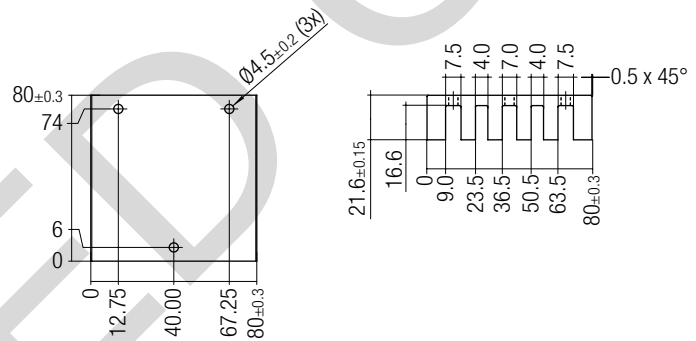
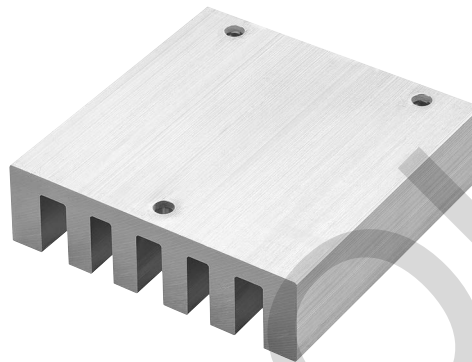
⑤ Assumed efficiency for the LED Driver is 0.9.

⑥ All values at tp = 65 °C.

⑦ HE ... high efficiency, BLO ... best LED operation (see page 4), HO ... high output.

Product description

- The adapter plate does not replace a heat sink

**Ordering data**

Type	Article number	Packaging	Weight per pc.
DLE GEN2 Adapter	28000420	1 pc(s).	0.250 kg

1. Standards

EN 62031
EN 62471
IEC 62717
IEC 61000-4-2
IEC 60529

1.1 Glow wire test

according to EN 62031 with increased temperature of 850 °C passed.

1.2 Photometric code

Key for photometric code, e. g. 930 / 359

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

1.3 Energy classification

Type	Forward current	Energy classification
DLE G3 65mm 2000lm 930 R EXC	400 mA	A+
	750 mA	A+
DLE G3 65mm 2000lm 940 R EXC	375 mA	A++
	700 mA	A+
DLE G3 65mm 3000lm 930 R EXC	450 mA	A+
	650 mA	A+
DLE G3 65mm 3000lm 940 R EXC	400 mA	A+
	600 mA	A+
DLE G3 65mm 2000lm 930 H EXC	400 mA	A+
	750 mA	A+
DLE G3 65mm 2000lm 940 H EXC	375 mA	A+
	700 mA	A+
DLE G3 65mm 3000lm 930 H EXC	450 mA	A+
	650 mA	A+
DLE G3 65mm 3000lm 940 H EXC	400 mA	A+
	600 mA	A+

2. Thermal details

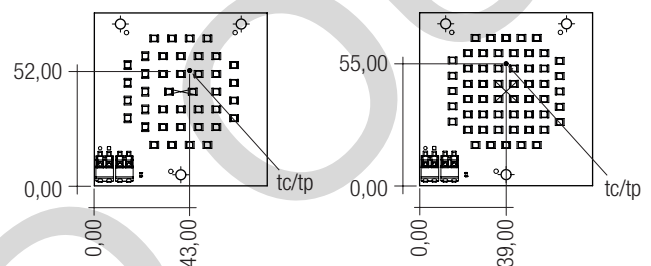
2.1 tp point, ambient temperature and life-time

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

For DLE G3 a tp temperature of 65 °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 tp 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.

To check the tc / tp temperature, the temperature sensor has to be mounted on the PCB at the marked position as stated in the drawing.



2.2 Storage and humidity

storage temperature	-30 ... +90 °C
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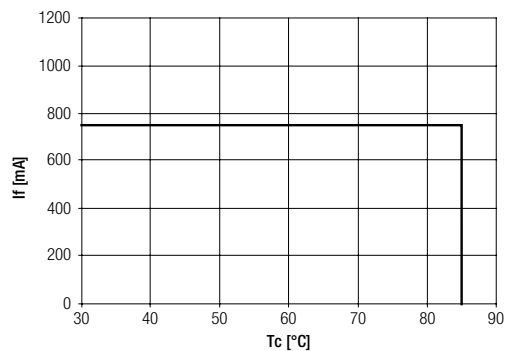
Operation only in non condensing environment.

Humidity during processing of the module should be between 30 to 60 %.

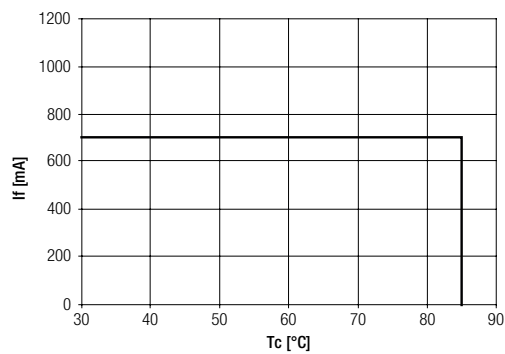
2.3 Derating curves

2.3.1 With housing

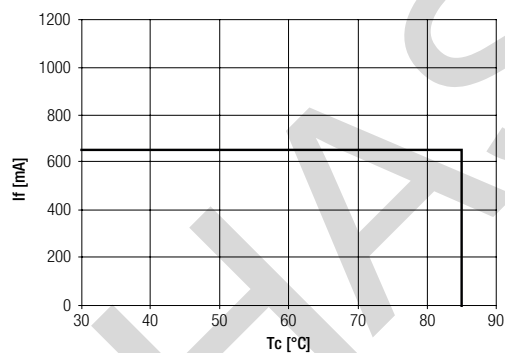
DLE G3 65mm 2000lm 930 H EXCITE



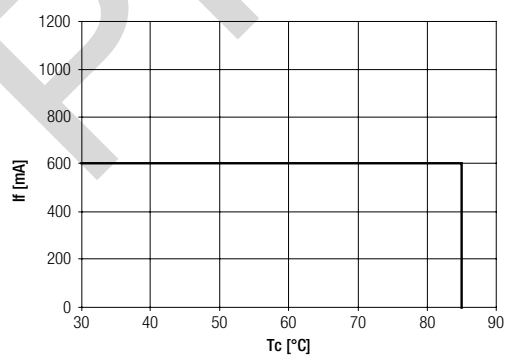
DLE G3 65mm 2000lm 940 H EXCITE



DLE G3 65mm 3000lm 930 H EXCITE

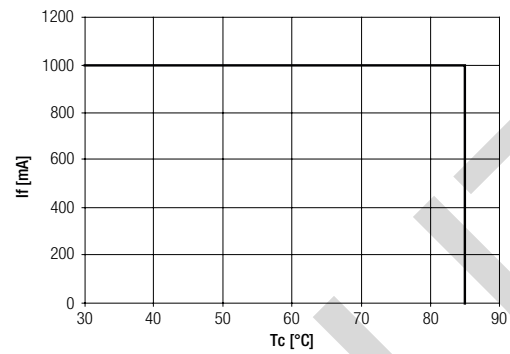


DLE G3 65mm 3000lm 940 H EXCITE

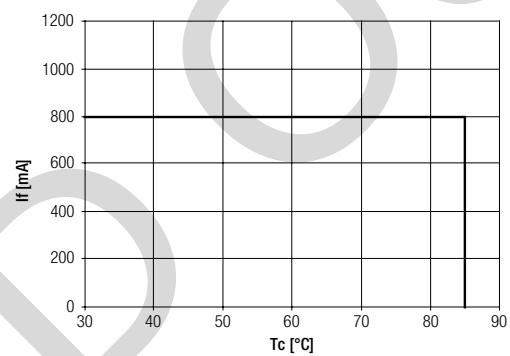


2.3.2 Without housing

DLE G3 65mm 2000lm 9x0 R EXCITE



DLE G3 65mm 3000lm 9x0 R EXCITE



2.4 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 DLE G3 will be greatly reduced or the DLE G3 may be destroyed.

2.5 Heat sink values

DLE G3 65mm 2000lm 9x0 EXCITE

ta	tp	Operating mode	R _{th, hs-a}
25°C	65°C	HE	6.94 K/W
35°C	65°C	HE	5.20 K/W
45°C	65°C	HE	3.47 K/W
55°C	65°C	HE	1.73 K/W
25°C	65°C	BLO / HO	3.54 K/W
35°C	65°C	BLO / HO	2.66 K/W
45°C	65°C	BLO / HO	1.77 K/W
55°C	65°C	BLO / HO	0.88 K/W

DLE G3 65mm 3000lm 9x0 EXCITE

ta	tp	Operating mode	R _{th, hs-a}
25°C	65°C	HE	3.44 K/W
35°C	65°C	HE	2.58 K/W
45°C	65°C	HE	1.72 K/W
55°C	65°C	HE	0.86 K/W
25°C	65°C	BLO / HO	2.27 K/W
35°C	65°C	BLO / HO	1.70 K/W
45°C	65°C	BLO / HO	1.13 K/W
55°C	65°C	BLO / HO	0.56 K/W

Notes

The actual cooling can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between DLE G3 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.

Additionally the DLE G3 has to be fixed on the heat sink with M3 screws to optimise the thermal connection.

Use of thermal interface material with thermal conductivity of $\lambda > 1 \text{ W/mK}$ and layer thickness of interface material with max. 50 μm or a similar interface material where the quotient of layer thickness and thermal conductivity $b < 50 \mu\text{mmK/W}$.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

DLE G3 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 Drivers from Tridonic in combination with DLE G3 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



DLE G3 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 DLE G3.



DLE G3 are basic isolated up to 320 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 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.

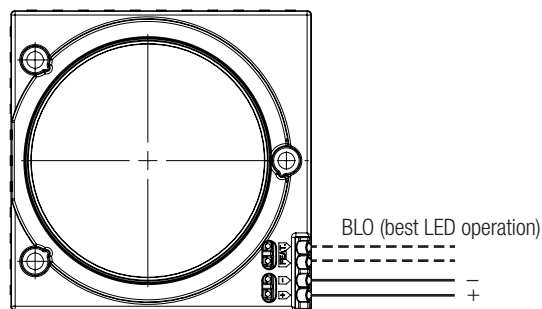
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

3.2 BLO function (Best LED Operation)

The BLO function is available for LED Driver of the ECO and TOP series.

The function ensures that the LED light module is operated with an optimal balance between luminous flux, efficiency and power.

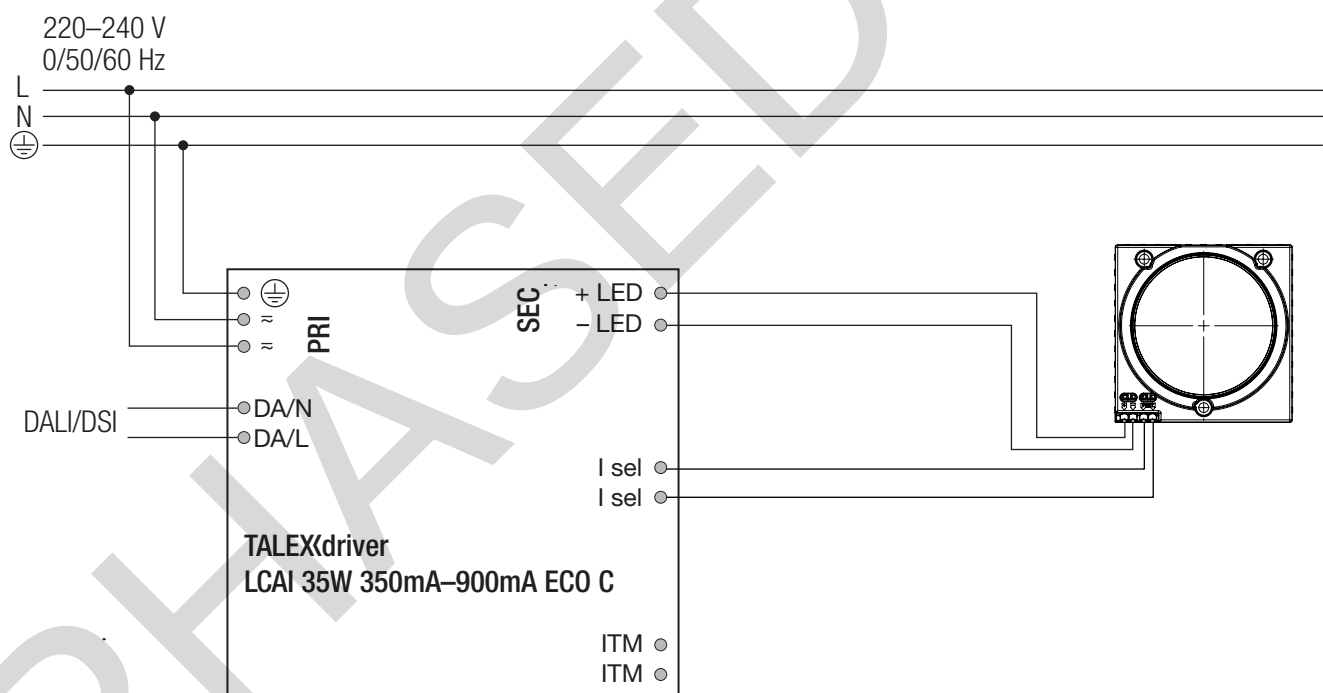
To achieve this the I-select terminal of the LED Driver is connected to the FEAT terminal of the LED light module. The current is set via the resistor which is integrated at the FEAT terminal. Connecting a resistor to the I-select terminal of the LED Driver is not necessary anymore.



STARK DLE G3 has no temperature monitoring (NTC).

The temperature monitoring is available with Tridonic LED Driver series TOP (up to 35 W) and ECO with the ITM feature in combination with the thermal sensor KTY82/210.

Wiring diagram: Example with LCAI 35W 350mA–900mA ECO C

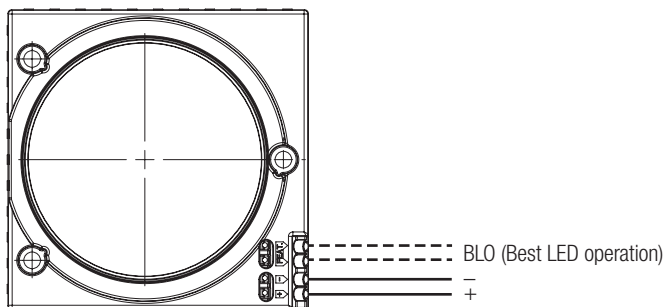


Control gears for BLO function

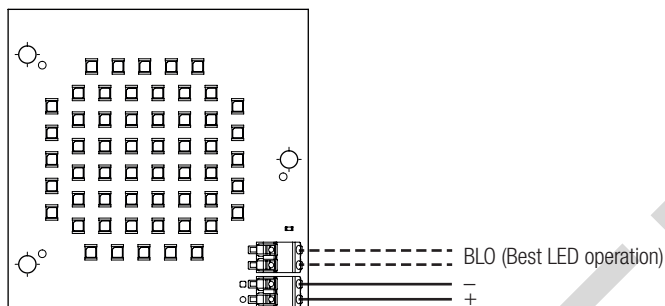
Module	Forward current	Power consumption module	Min. forward voltage module	Max. Forward voltage module	Dimmable LED Driver	Non-dimmable LED Driver
DLE G3 65mm 2000lm 930	750 mA	17.2 W	21.3 V	24.2 V	LCAI 20W 350-900mA ECO LCAI 35W 350-900mA ECO	LCI 20W 350-900mA TOP LCI 35W 350-900mA TOP
DLE G3 65mm 2000lm 940	700 mA	15.9 W	21.1 V	24.1 V	LCAI 20W 350-900mA ECO LCAI 35W 350-900mA ECO	LCI 20W 350-900mA TOP LCI 35W 350-900mA TOP
DLE G3 65mm 3000lm 930	650 mA	26.3 W	37.5 V	42.7 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
DLE G3 65mm 3000lm 940	600 mA	24.1 W	37.2 V	42.4 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP

3.3 Wiring

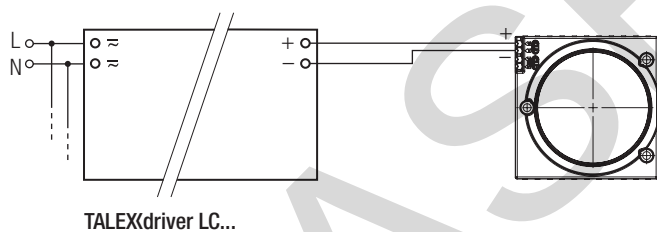
Wiring with housing



Wiring without housing



Wiring example

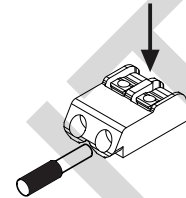
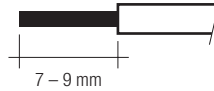


3.4 Wiring type and cross section

The wiring can be solid or stranded wires with a cross section of 0.2 to 0.75 mm².

For the push-wire connection you have to strip the insulation (7–9 mm). Loosen wire through twisting and pulling.

wire preparation:
0.2 – 0.75 mm²



Release of the wiring

Press down the "push button" and remove the cable from front.

3.4 Mounting instruction



DLE G3 from Tridonic which have to be installed on a heat sink have to be connected with heat-conducting paste or heat conducting adhesive film and fixed with M3 screws.

The fixing/cooling surface must be cleaned by removing all dirt, dust and grease before installing the LED modules.

None of the components of the DLE G3 (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 2 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used for LED modules without housing.

For further information please refer to the brochure entitled "Technical Design-In-Guide DLE GEN3".



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.

3.6 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.

For further information for EOS/ESD safety guidelines and the ESD classification please refer to the brochure entitled <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 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

DLE G3 65mm 2000lm 9x0 EXCITE

Operating current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
375 mA	55 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	32,700 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	17,000 h	39,400 h	33,500 h	>50,000 h	50,000 h	>50,000 h
	85 °C	9,000 h	21,100 h	18,300 h	41,000 h	28,000 h	>50,000 h
400 mA	55 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	31,500 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	15,900 h	28,400 h	30,900 h	>50,000 h	46,500 h	>50,000 h
	85 °C	8,600 h	20,000 h	17,800 h	40,100 h	26,600 h	>50,000 h
700 mA	55 °C	46,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	24,400 h	>50,000 h	50,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	11,600 h	27,800 h	23,300 h	>50,000 h	35,400 h	>50,000 h
	85 °C	6,300 h	14,900 h	13,400 h	31,100 h	20,800 h	46,700 h
750 mA	55 °C	42,600 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	22,300 h	50,000 h	43,900 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	11,000 h	26,600 h	22,100 h	50,000 h	34,100 h	>50,000 h
	85 °C	6,100 h	14,500 h	13,000 h	29,100 h	20,000 h	44,400 h

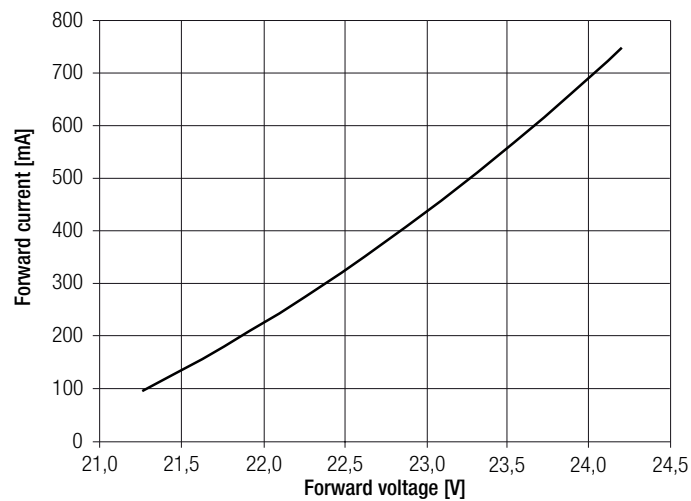
DLE G3 65mm 3000lm 9x0 EXCITE

Operating current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
400 mA	55 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	29,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	15,200 h	37,200 h	30,000 h	>50,000 h	45,600 h	>50,000 h
	85 °C	8,300 h	20,000 h	16,900 h	38,900 h	26,200 h	>50,000 h
450 mA	55 °C	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	28,100 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	14,400 h	35,000 h	28,200 h	>50,000 h	43,400 h	>50,000 h
	85 °C	8,000 h	18,800 h	16,400 h	37,800 h	24,700 h	>50,000 h
600 mA	55 °C	45,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	23,300 h	50,000 h	45,100 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	12,000 h	29,400 h	23,800 h	>50,000 h	37,300 h	>50,000 h
	85 °C	6,600 h	15,500 h	14,000 h	32,000 h	21,300 h	48,200 h
650 mA	55 °C	41,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	41,400 h	>50,000 h	42,000 h	>50,000 h	>50,000 h	>50,000 h
	75 °C	11,000 h	27,500 h	23,000 h	>50,000 h	35,500 h	>50,000 h
	85 °C	6,200 h	14,800 h	13,000 h	30,000 h	20,300 h	46,000 h

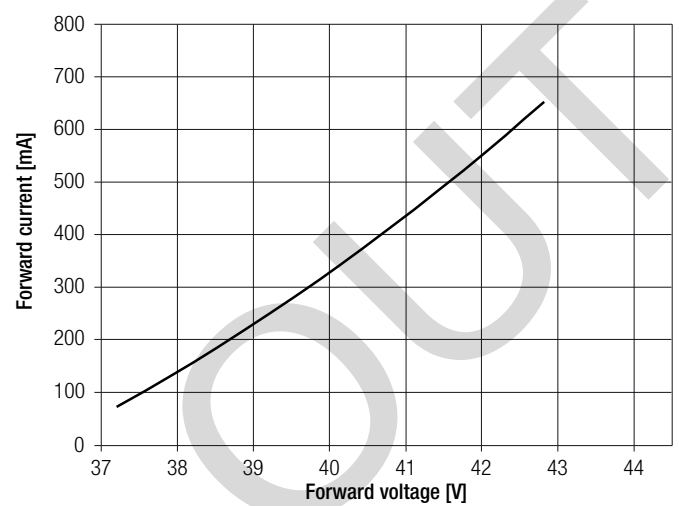
5. Electrical values

5.1 Typ. forward voltage vs. forward current at $t_p = 65^\circ\text{C}$

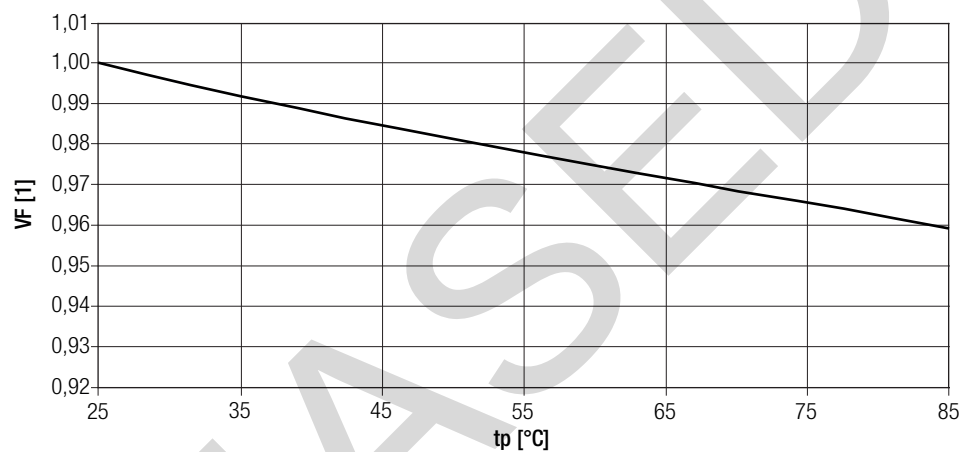
DLE G3 65mm 2000lm 9x0 EXCITE



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5.2 Forward voltage vs. t_p temperature



The diagrams 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 integral after a settling time of 100 ms. The current impuls depends on the module type.

Module type	Current impulse
TALEXmodule DLE G3 65mm 2000lm 9x0 EXC	BLO mode
TALEXmodule DLE G3 65mm 3000lm 9x0 EXC	BLO mode

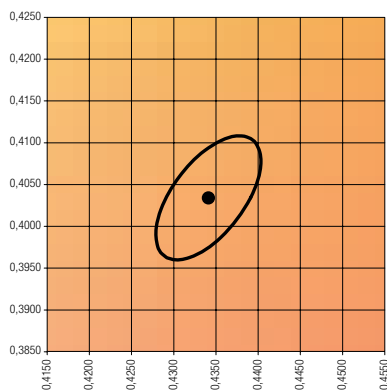
The ambient temperature of the measurement is $t_a = 25^\circ\text{C}$.

The measurement tolerance of the colour coordinates are ± 0.01 .

6.2 Colour coordinates for LED module without housing

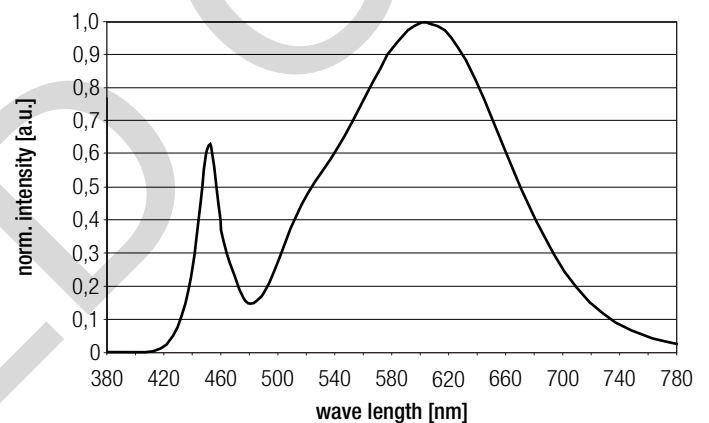
3,000 K

	x0	y0
Centre	0.4344	0.4032



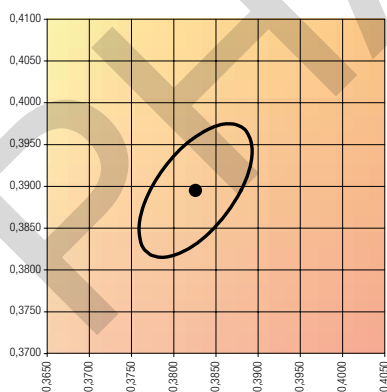
MacAdam ellipse: 3SDCM

Colour shift DLE G3 R to DLE G3 H	Δx	Δy
	+0,0060	+0,0031



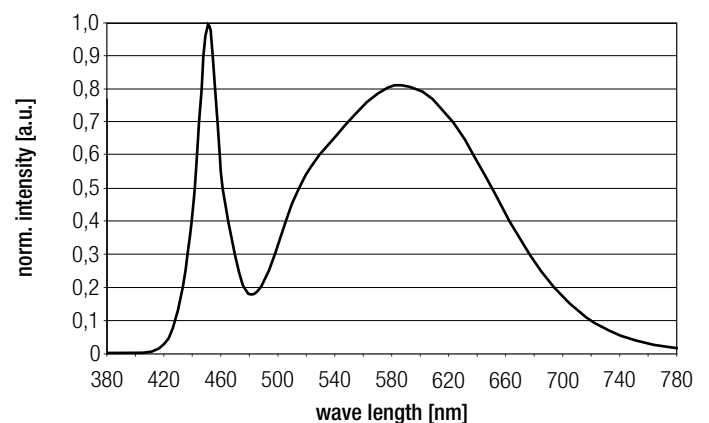
4,000 K

	x0	y0
Centre	0.3825	0.3796



MacAdam ellipse: 3SDCM

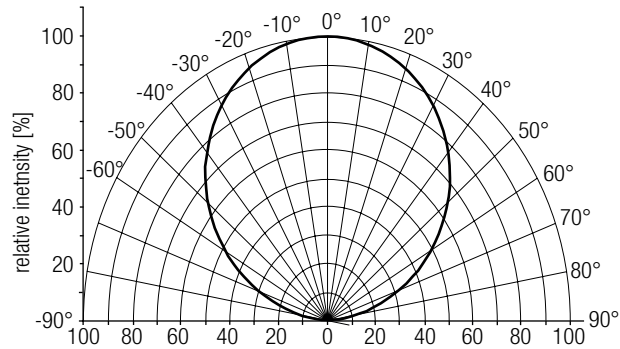
Colour shift DLE G3 R to DLE G3 H	Δx	Δy
	+0,0062	+0,0052



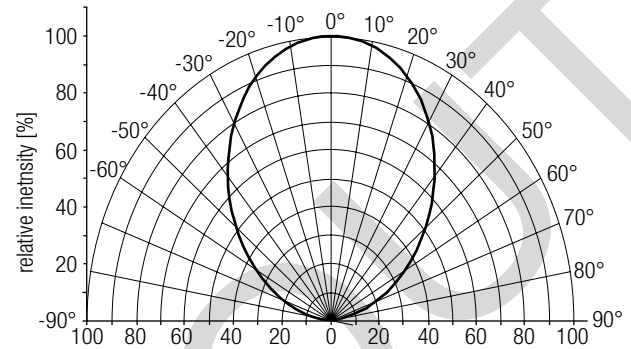
6.3 Light distribution

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

Light distribution without housing (only LED module)

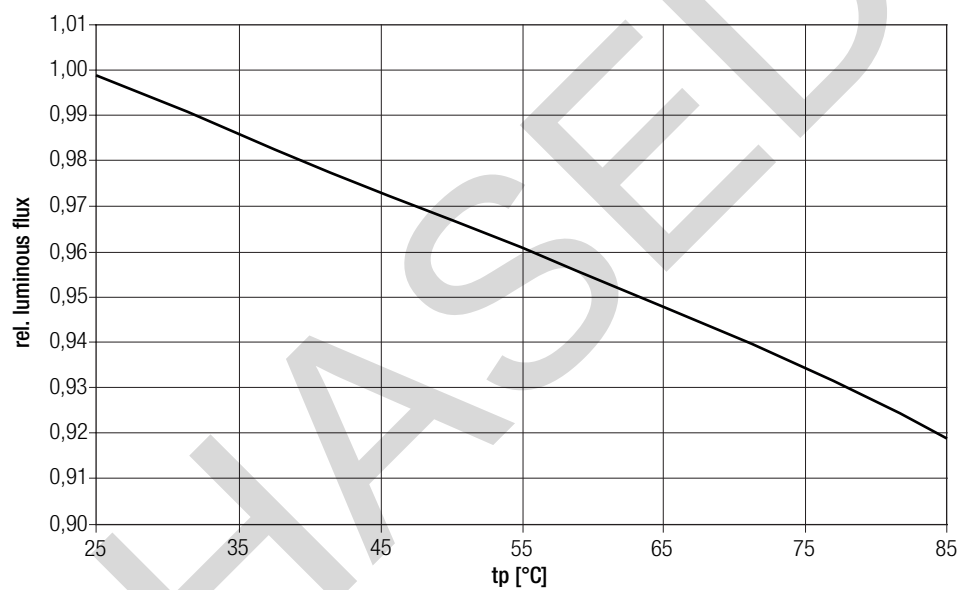


Light distribution with housing



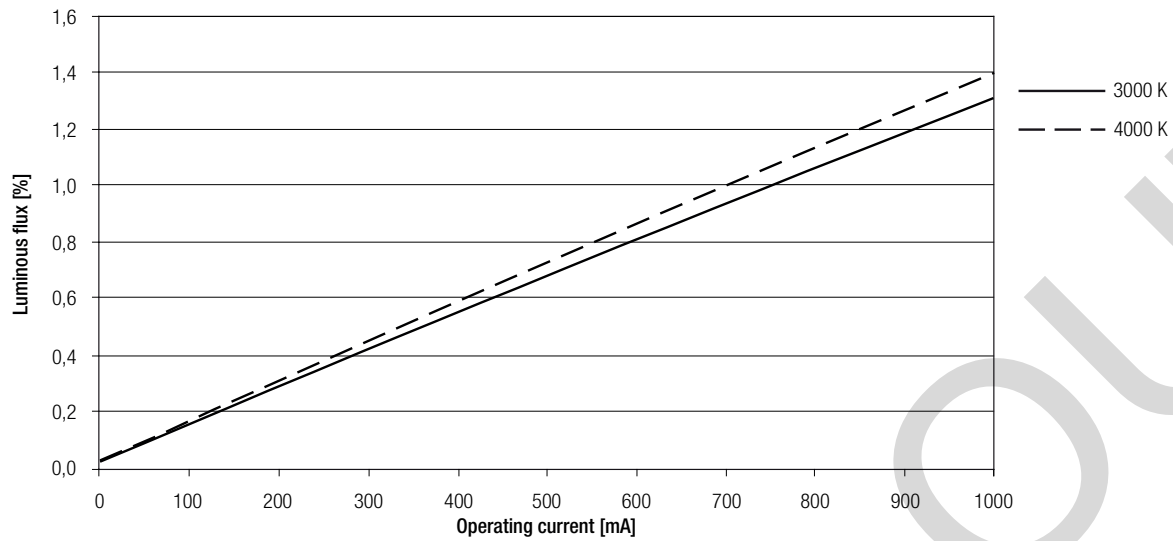
For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

6.4 Relative luminous flux vs. tp temperature



6.5 Relative luminous flux vs. operating current at $t_p = 65^\circ\text{C}$, 100 % luminous flux at BLO operating mode, LED module without housing

DLE G3 65mm 2000lm 9x0 R EXCITE



DLE G3 65mm 3000lm 9x0 R EXCITE

