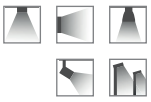

TALEX(module SLE G4 15mm 2000lm 8x0 H ADV D50

TALEX(module SLE

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Product description

- For spotlights and downlights
- Housing with Snap-On feature for easy reflector mounting
- Luminous flux up to 2,920 lm at tp = 65 °C
- High efficacy up to 147 lm/W for the LED module at tp = 25 °C
- High system efficacy up to 128 lm/W at tp = 65 °C
- High colour consistency (MacAdam 3)
- Small LES (light emitting surface) diameter enables small beam angle for spotlights
- Excellent thermal management by COB technology
- Uniform radiation with Dam&Fill technology
- Fixing holes for M3 screws
- Integrated LED module
- Cooling required
- Flexible operating modes
- 5-year guarantee

Standards, page 3

Colour temperatures and tolerances, page 8

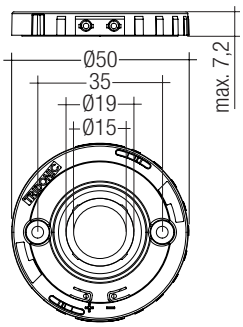
RoHS

TALEX module SLE G4 15mm 2000lm 8x0 H ADV D50

TALEX module SLE

Technical data

Beam characteristic	115°
Ambient temperature range	-25 ... +50 °C
tp rated	65 °C
tc[1]	up to 100 °C
Max. DC forward current[2]	700 mA
Max. permissible LF current ripple	1,200 mA
Max. permissible peak current	2,400 mA / max. 10 ms
Max. permissible output voltage of LED Driver[3]	75 V
Insulation test voltage	1.15 kV
ESD classification	severity level 4
Risk group (EN 62471:2008)	1
Type of protection	IP00



Dimensions in mm

Ordering data

Type	Article number	Colour temperature	Housing	Thermal interface material	Con-nection cable	Packaging	Weight per pc.
SLE G4 15mm 2000lm 830 H ADV D50	**89602073**	3,000 K	yes	no	no	50 pc(s).	0.004 kg
SLE G4 15mm 2000lm 840 H ADV D50	**89602074**	4,000 K	yes	no	no	50 pc(s).	0.004 kg

Specific technical data

Type[7]	Photo-metric code	Forward current	Luminous flux at tp = 25 °C[4]	Luminous flux at tp = 65 °C[4]	Power consumption[4] [6]	Min. forward voltage at tp = 65 °C	Max. forward voltage 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
SLE 15mm 2000lm – Operating mode HE at 350 mA											
SLE G4 15mm 2000lm 830 ADV	830/3x9	350 mA	1,580 lm	1,510 lm	11.6 W	31.0 V	36.0 V	134 lm/W	130 lm/W	117 lm/W	80
SLE G4 15mm 2000lm 840 ADV	840/3x9	350 mA	1,730 lm	1,650 lm	11.6 W	31.0 V	36.0 V	147 lm/W	142 lm/W	128 lm/W	80
SLE 15mm 2000lm – Operating mode NM											
SLE G4 15mm 2000lm 830 ADV	830/3x9	500 mA	2,190 lm	2,080 lm	17.3 W	32.2 V	37.4 V	125 lm/W	120 lm/W	108 lm/W	80
SLE G4 15mm 2000lm 840 ADV	840/3x9	500 mA	2,380 lm	2,270 lm	17.3 W	32.2 V	37.4 V	136 lm/W	131 lm/W	118 lm/W	80
SLE 15mm 2000lm – Operating mode HO at 700 mA											
SLE G4 15mm 2000lm 830 ADV	830/3x9	700 mA	2,920 lm	2,770 lm	25.3 W	33.8 V	39.2 V	114 lm/W	109 lm/W	99 lm/W	80
SLE G4 15mm 2000lm 840 ADV	840/3x9	700 mA	3,170 lm	2,920 lm	25.3 W	33.8 V	39.2 V	123 lm/W	115 lm/W	104 lm/W	80

[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, NM ... nominal mode, HO ... high output.

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1. Standards

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

1.1 Glow wire test

according to EN 62031 with increased temperature of 960 °C passed.

1.2 Photometric code

Key for photometric code, e. g. 830 / 369

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 %

1.3 Energy classification

Type	Forward current	Energy classification
SLE G4 15mm 2000lm 830 H ADV D50	350 mA	A+
	500 mA	A+
	700 mA	A+
SLE G4 15mm 2000lm 840 H ADV D50	350 mA	A++
	500 mA	A+
	700 mA	A+

2. Thermical details

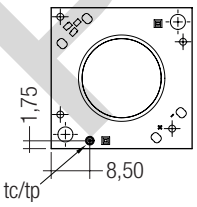
2.1 tp point, ambient temperature and life-time

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

For TALEX(module SLE G4 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.



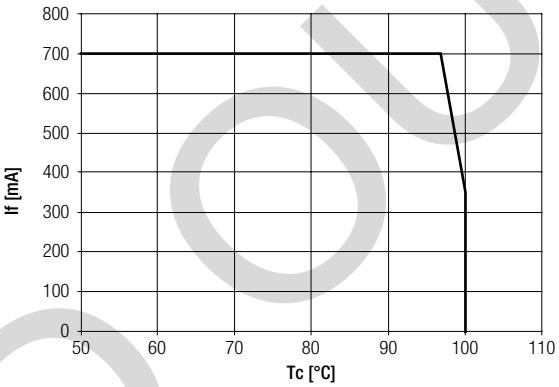
2.2 Storage and humidity

storage temperature	-30 ... +80 °C

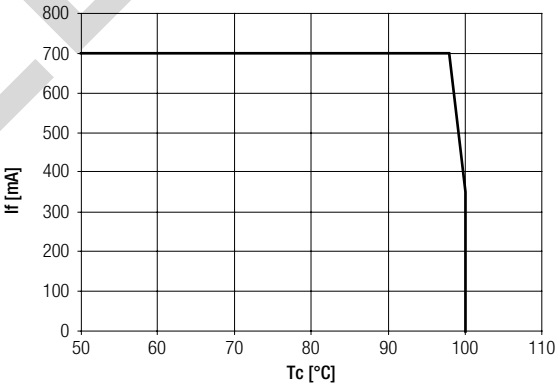
Operation only in non condensing environment.
Humidity during processing of the module should be between 30 to 70 %.

2.3 Derating curves

SLE G4 15mm 2000lm 830 ADVANCED



SLE G4 15mm 2000lm 840 ADVANCED



2.4 Thermal design and heat sink

The rated life of TALEX(products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the TALEX(module SLE G4 will be greatly reduced or the TALEX(module SLE G4 may be destroyed.

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2.5 Heat sink values

SLE G4 15mm 2000lm 8x0 ADVANCED

ta	tp	Operating mode	$R_{th, hs-a}$
25 °C	65 °C	HE	4.63 K/W
30 °C	65 °C	HE	4.04 K/W
40 °C	65 °C	HE	2.84 K/W
50 °C	65 °C	HE	1.65 K/W
25 °C	65 °C	NM	2.97 K/W
30 °C	65 °C	NM	2.58 K/W
40 °C	65 °C	NM	1.80 K/W
50 °C	65 °C	NM	1.03 K/W
25 °C	65 °C	HO	1.86 K/W
30 °C	65 °C	HO	1.61 K/W
40 °C	65 °C	HO	1.11 K/W
50 °C	65 °C	HO	0.61 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 TALEX‹module SLE G4 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the TALEX‹module SLE G4 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 l > 1 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 µmmK/W.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

TALEX‹module SLE G4 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 TALEX‹ LED Drivers from Tridonic in combination with TALEX‹module SLE G4 guarantees the necessary protection for safe and reliable operation.

If a LED Driver other than Tridonic TALEX‹converter is used, it must provide the following protection:
- Short-circuit protection
- Overload protection
- Overtemperature protection

TALEX‹module SLE G4 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 TALEX‹module SLE G4.

TALEX‹module SLE G4 are basic isolated up to 75 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 75 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.

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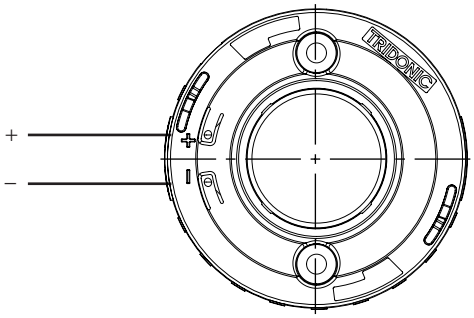
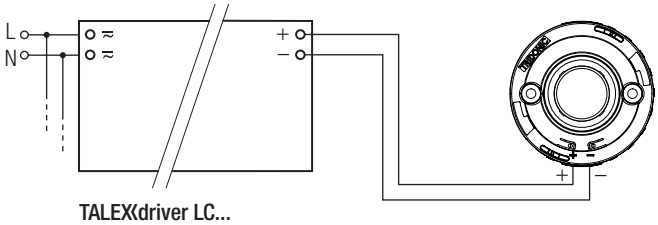
3.2 Wiring



Wiring example



TALEX(driver LC...

3.3 Wiring type and cross section

The wiring has to be solid cable with a cross section of 0.5 to 0.75 mm² or with stranded wire with soldered ends with a cross section of 0.5 mm².
For the push-wire connection you have to strip the insulation (7 – 8 mm).

Removing wires by lightly pressing on the push button.

wire preparation:

7 – 8 mm

3.4 Mounting instruction

TALEX(module SLE G4 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 TALEX(modules.

None of the components of the TALEX(module SLE G4 (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 to the brochure entitled "Technical Design-In-Guide SLE GEN4".

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.
For further information for EOS/ESD safety guidlines and the ESD classification please refer to the brochure entitled http://www.tridonic.com/esd-protection.

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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 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

SLE G4 15mm 2000lm 8x0 ADVANCED

Operating mode	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
HE	65 °C	55,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	75 °C	41,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	85 °C	31,000 h	47,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
NM	65 °C	49,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	75 °C	36,000 h	54,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	85 °C	27,000 h	41,000 h	58,000 h	> 60,000 h	> 60,000 h	> 60,000 h
HO	65 °C	40,000 h	≥ 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	75 °C	30,000 h	44,000 h	> 60,000 h	> 60,000 h	> 60,000 h	> 60,000 h
	85 °C	22,000 h	33,000 h	47,000 h	> 60,000 h	> 60,000 h	> 60,000 h

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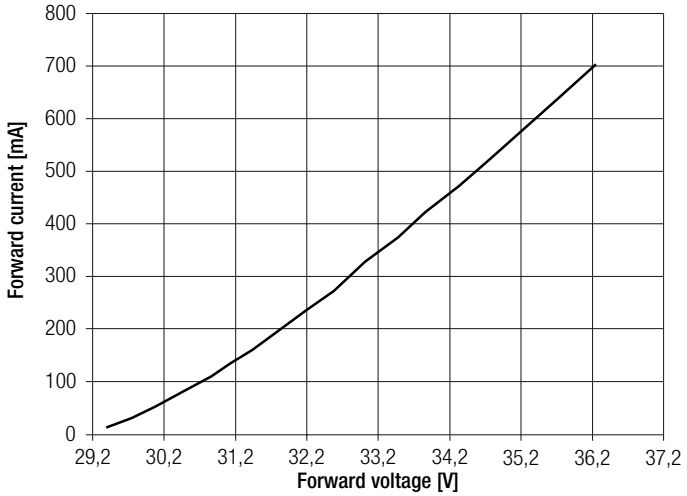
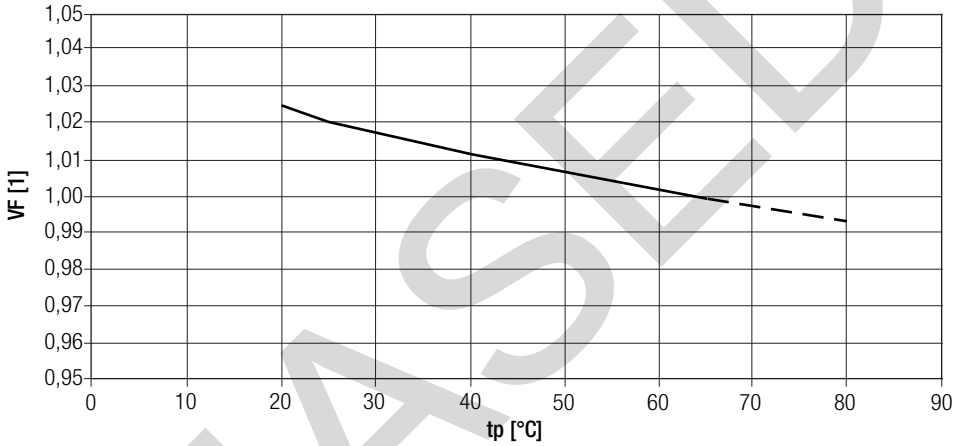
5. Electrical values

5.1 Typ. forward voltage vs. forward current at tp = 65 °C

SLE G4 15mm 2000lm 8x0 ADVANCED



5.2 Forward voltage vs. tp temperature



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

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6. Photometric charcteristics

6.1 Coordinates and tolerances according to CIE 1931

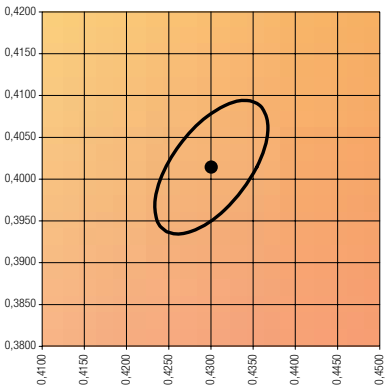
The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.

Module type	Current impulse
TALEXmodule SLE G4 15mm 2000lm 8x0 ADV	500 mA

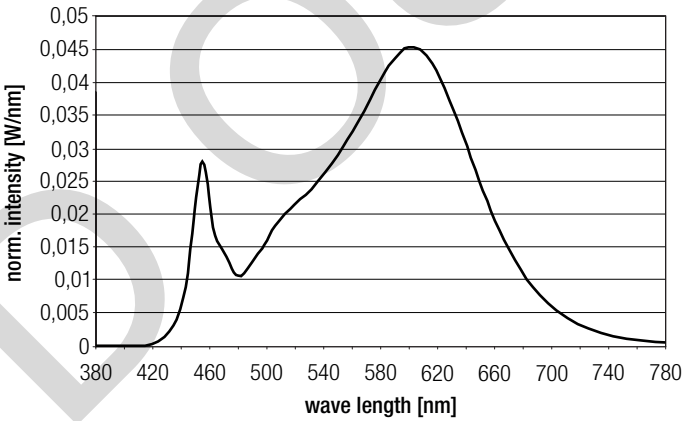
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4300	0.4016

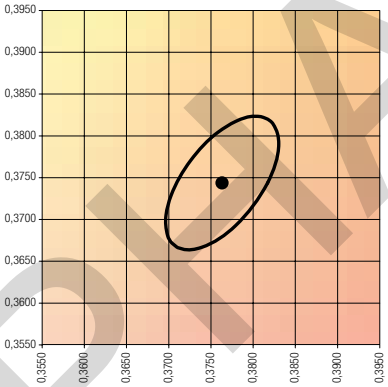


MacAdam ellipse: 3SDCM

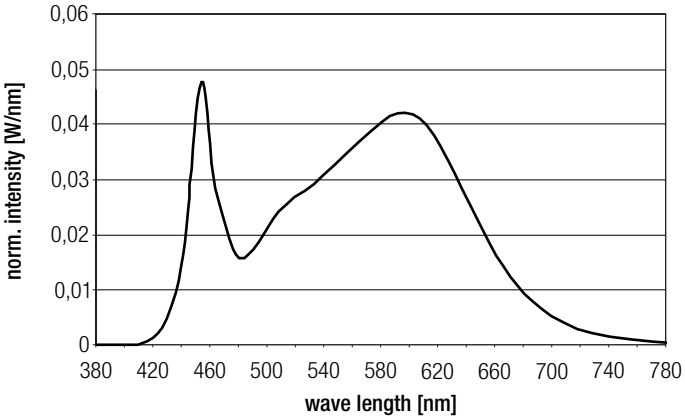


4,000 K

	x0	y0
Centre	0.3761	0.3740



MacAdam ellipse: 3SDCM



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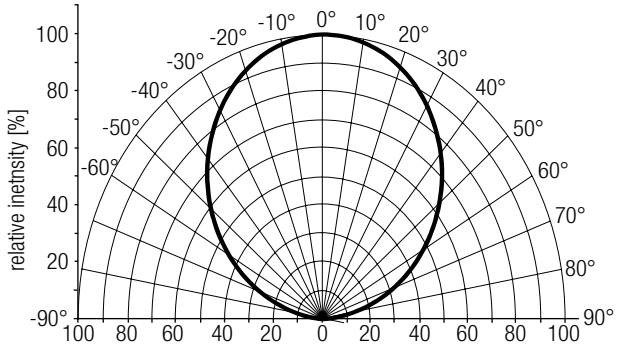
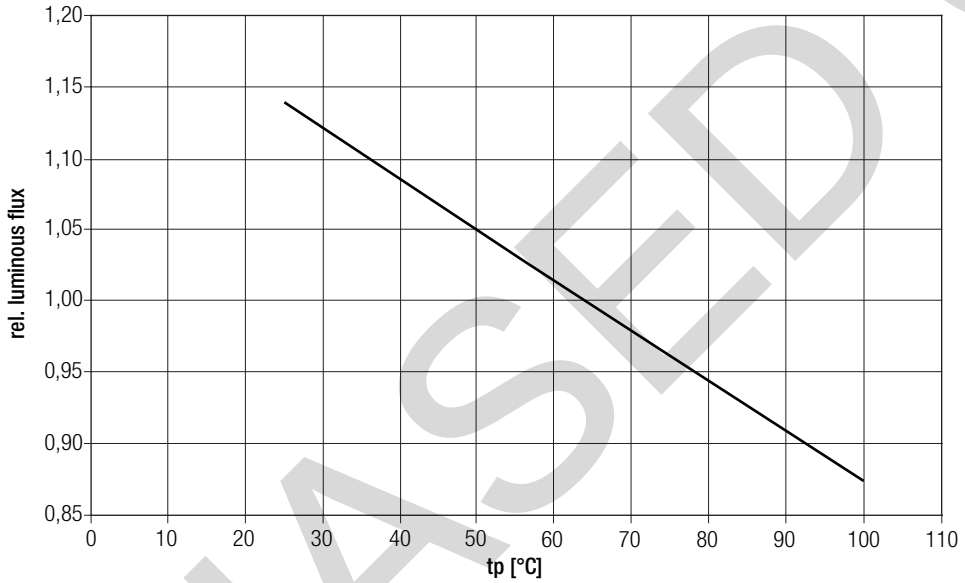
6.2 Light distribution

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



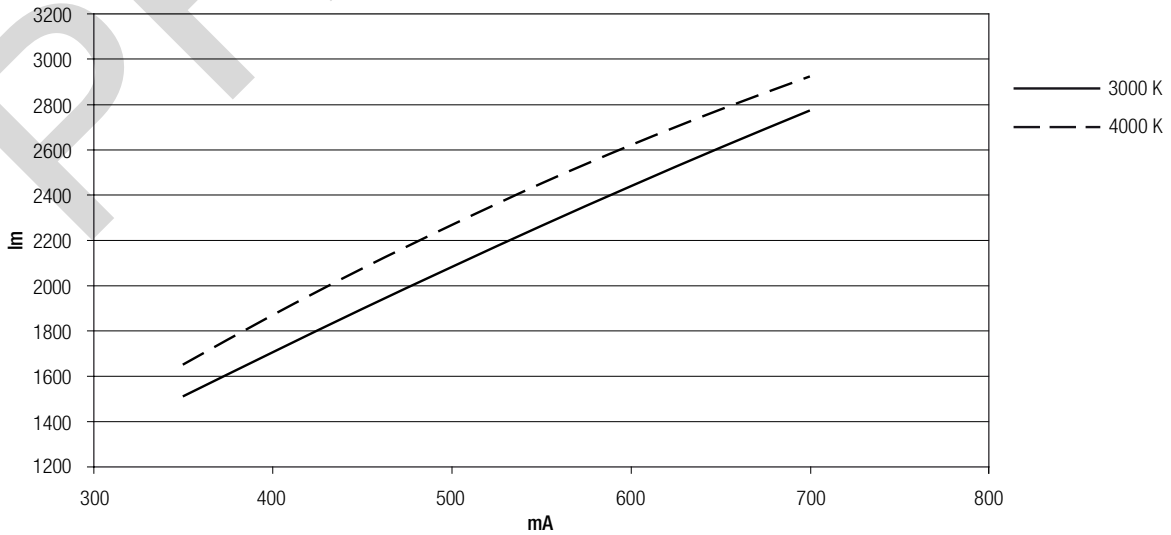
For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

6.3 Relative luminous flux vs. tp temperature



6.4 Relative luminous flux vs. operating current

SLE G4 15mm 2000lm 8x0 ADVANCED at tp = 65 °C



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