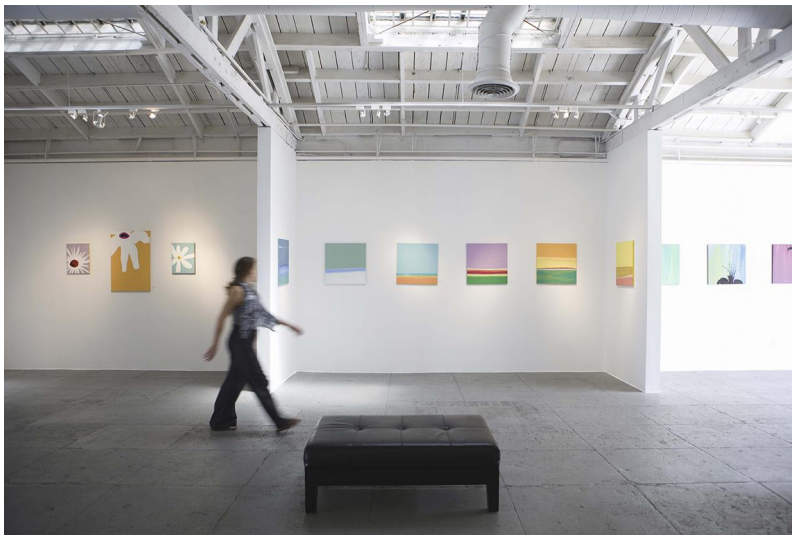
TRIDONIC

Module SLE G7 ART EXC

Modules SLE excite

LES17 with housing

LES21 with housing



Product description

_ Highest light quality in the market with full spectrum technology
_ Application: Shop, Art & Culture
_ For operating with SELV Driver suitable
_ High colour consistency (MacAdam 2)
_ Excellent thermal management by COB technology
_ Uniform radiation with Dam&Fill technology
_ Integrated LED module
_ Cooling required
_ Flexible operating mode
_ HE ... High Efficiency, NM ... Nominal Mode, HO ... High Output
_ Long lifetime: 55,000 hours
_ 5 years guarantee (conditions at https://www.tridonic.com/manufacturer-guarantee-conditions)

Optical properties

_ Useful luminous flux 4,933 lm at Irated and tp = 25 °C
_ Efficacy of the LED module 100 lm/W at Irated and tp = 25 °C
_ Special Colour spectrum for High End Applications with CRI 97 (compareable to incandescent lamp)
_ Small colour tolerance (MacAdam 2)

Mechanical properties

_ Module dimension LES17 and LES21
_ Housing with Snap-On feature for easy reflector mounting
_ 50 mm housing with 35 mm mounting hole distance acc. to Zhaga
_ Fixing holes for M3 screws

System solution

_ Combine Tridonic's LED modules and dimmable drivers to achieve an outstanding system efficacy (configuration possible via https://setbuilder.tridonic.com/)

Website

http://www.tridonic.com/28002749

Spotlights | Downlights | Linear | Area | Floor | Wall | Free-standing | Street | Decorative | High bay

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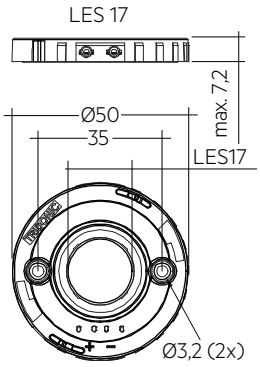
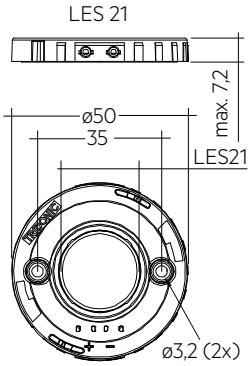


Dimensions in mm, *optical LES



Dimensions in mm, *optical LES

Ordering data

Type	Article number	Colour temperature	Packaging, carton	Weight per pc.
SLE G7 17mm – With housing				
SLE G7 17mm 5000lm 930 ART H EXC	**28002749**	3,100 K	50 pc(s).	0.007 kg
SLE G7 21mm – With housing				
SLE G7 21mm 6000lm 930 ART H EXC	**28002759**	3,100 K	50 pc(s).	0.007 kg

Technical data

Beam characteristic	115°
Ambient temperature ta	-30 … +80 °C
tp rated	65 °C
tc ①	105 °C
Irated for LES17	1,050 mA
Irated for LES21	1,400 mA
Imax for LES17 ①	1,540 mA
Imax for LES21 ①	2,200 mA
Max. permissible LF current ripple for LES17	1,680 mA
Max. permissible LF current ripple for LES21	2,400 mA
Max. permissible peak current for LES17	2,520 mA / max. 8 ms
Max. permissible peak current for LES21	3,600 mA / max. 8 ms
Max. working voltage for insulation SELV ②	< 60 V
Insulation test voltage	0.5 kV
CTI of the printed circuit board	≥ 600
Colour tolerance	2 SDCM
ESD classification	Severity level 4
Risk group (IEC 62471)	RG1
Type of protection	IP00
Lumen maintenance L70B50	55,000 h
Guarantee (conditions at www.tridonic.com)	5 Year(s)

Approval marks

RoHS

Standards

EN 62031, EN 62471, EN 62717, IEC 61000-4-2, UL 8750

Specific technical data

Type	Article number	Photometric code	Useful luminous flux at tp = 25 °C③	Expected luminous flux at tp rated④	Typ. forward current	Min. forward voltage at tp rated	Max. forward voltage at tp = 25 °C	Power consumption Pon at tp = 25 °C⑤	Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Colour rendering index CRI
SLE 17mm 5000lm – Operating mode HE at 500 mA											
SLE G7 17mm 5000lm 930 ART H EXC	**28002749**	931/259	–	1,729 lm	500 mA	30.6 V	36.7 V	–	–	104 lm/W	>97
SLE 17mm 5000lm – Operating mode NM at 1,050 mA											
SLE G7 17mm 5000lm 930 ART H EXC	**28002749**	931/259	3,694 lm	3,450 lm	1,050 mA	32.0 V	38.3 V	37.3 W	99 lm/W	95 lm/W	>97
SLE 17mm 5000lm – Operating mode HO at 1,400 mA											
SLE G7 17mm 5000lm 930 ART H EXC	**28002749**	931/259	–	4,466 lm	1,400 mA	32.7 V	39.2 V	–	–	90 lm/W	>97
SLE 21mm 6000lm – Operating mode HE at 700 mA											
SLE G7 21mm 6000lm 930 ART H EXC	**28002759**	931/259	–	2,420 lm	700 mA	30.6 V	36.7 V	–	–	104 lm/W	>97
SLE 21mm 6000lm – Operating mode NM at 1,400 mA											
SLE G7 21mm 6000lm 930 ART H EXC	**28002759**	931/259	4,933 lm	4,614 lm	1,400 mA	31.9 V	38.2 V	49.6 W	100 lm/W	95 lm/W	>97
SLE 21mm 6000lm – Operating mode HO at 2,000 mA											
SLE G7 21mm 6000lm 930 ART H EXC	**28002759**	931/259	–	6,353 lm	2,000 mA	32.8 V	39.3 V	–	–	89 lm/W	>97

① See derating curves in data sheet section 2.3.
② The detailed explanation, see data sheet section 3.1.
③ Tolerance of useful light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %.
④ Tolerance of expected light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %. Based on calculation.
⑤ Tolerance of power consumption Pon ± 10 %. Measurement uncertainty ± 5 %.

1. Standards

EN 62031
EN 62471
IEC 62717
IEC 61000-4-2
UL 8750 (for CLASS2 circuits and dry locations)

1.1 Glow wire test for housing variants

according to IEC 60695-2-11 with increased temperature of 850 °C passed.

1.2 Photometric code

Key for photometric code, e. g. 830 / 359

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

1.3 Energy classification

Type	Colour tempera-ture	Forward current	Energy classifi-cation	Energy consumption
SLE G7 17mm 5000lm 930 ART H EXC	3,100 K	1,050 mA	F	38 kWh / 1,000 h
SLE G7 21mm 6000lm 930 ART H EXC	3,100 K	1,400 mA	F	50 kWh / 1,000 h

Energy label and further information at www.tridonic.com in the certificates tab of the corresponding product page and at the EPREL data base https://eprel.ec.europa.eu/

2. Thermical details

2.1 tp point, ambient temperature and lifetime

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

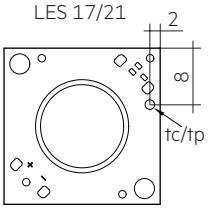
For SLE G7 a tp temperature of 149 °F has to be complied in order to achieve an optimum between heat sink requirements, light output and lifetime.

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.

The tc and tp temperature of LED modules from Tridonic are measured at the same reference point.

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.

LES 17/21



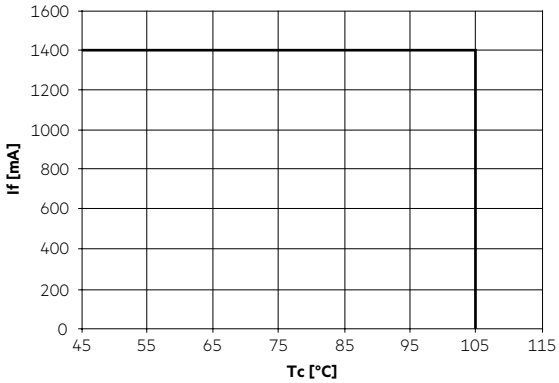
2.2 Storage and humidity

storage temperature	-30 ... +80 °C

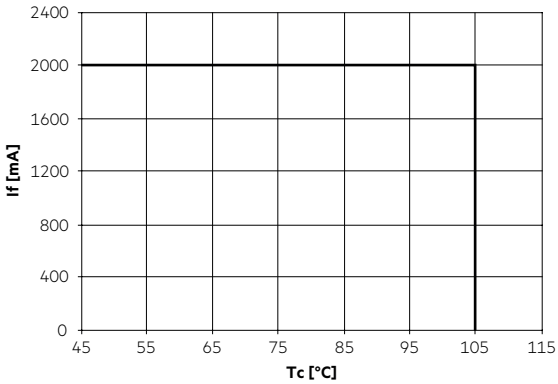
Operation only in non condensing environment.
Humidity during processing of the module should be between 0 to 85 %.

2.3 Derating curves

SLE G7 17mm 5000lm EXC



SLE G7 21mm 6000lm EXC



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 SLE G7 will be greatly reduced or the SLE G7 may be destroyed.

2.5 Heat sink values

SLE G7 17mm 5000lm 9x0 EXC

ta	tp	Operating current	$R_{th, hs-a}$
25 °C	65 °C	500 mA	2.3 K/W
35 °C	65 °C	500 mA	1.7 K/W
45 °C	65 °C	500 mA	1.1 K/W
25 °C	65 °C	1,050 mA	1.0 K/W
35 °C	65 °C	1,050 mA	0.7 K/W
45 °C	65 °C	1,050 mA	0.4 K/W
25 °C	65 °C	1,400 mA	0.7 K/W
35 °C	65 °C	1,400 mA	0.5 K/W
45 °C	65 °C	1,400 mA	0.3 K/W

SLE G7 21m 6000lm 9x0 EXC

ta	tp	Operating current	$R_{th, hs-a}$
25 °C	65 °C	700 mA	1.6 K/W
35 °C	65 °C	700 mA	1.2 K/W
45 °C	65 °C	700 mA	0.8 K/W
25 °C	65 °C	1,400 mA	0.7 K/W
35 °C	65 °C	1,400 mA	0.5 K/W
45 °C	65 °C	1,400 mA	0.3 K/W
25 °C	65 °C	2,000 mA	0.5 K/W
35 °C	65 °C	2,000 mA	0.3 K/W
45 °C	65 °C	2,000 mA	0.2 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 SLE G7 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the SLE G7 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 λ > 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

SLE G7 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 SLE G7 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

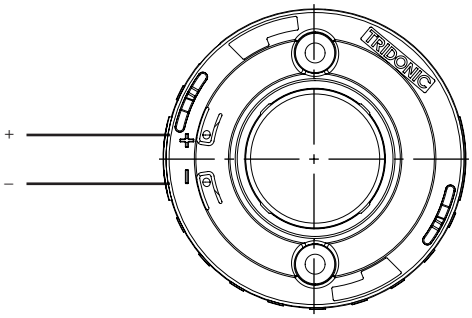
SLE G7 must be supplied by a constant current LED driver. Operation with a constant voltage LED driver will lead to an irreversible damage of the module.
Wrong polarity can damage the SLE G7.

SLE G7 must not be operated with nonSELV LED driver.

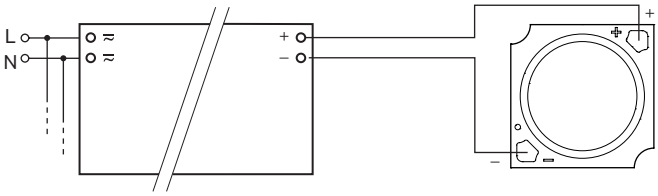
SLE G7 are basic insulated up to 60 V SELV against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED driver (also against earth) is above 60 V SELV, an additional insulation between LED module and heat sink is required (for example by insulated 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 with housing (LES17 and LES21)



Wiring example



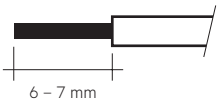
Driver LC ...

3.3 Wiring type and cross section for housing variants

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 (6 – 7 mm).

Loosen wire through twisting and pulling.

wire preparation:



3.4 Mounting instruction

SLE G7 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 SLE G7 (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.3 Nm (LES13, LES15)
0.5 Nm (LES17, LES21)

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 (notice working temperature) or rounded head screw with collar (ISO 7380-2) with head diameter ≥ 6.9 mm must be used for LED modules without housing (for LES13, LES15).

For further information please refer to to the brochure entitled "Technical Design-In-Guide SLE GEN7".

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.

4. Lifetime

4.1 Lifetime, lumen maintenance and failure rate

The light output of an LED module decreases over the lifetime, 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 lifetime 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

Lifetime declarations are informative and represent no warranty claim. Preliminary calculated lifetime data until LM80 test reports are available

SLE G7 17mm 5000lm EXC

Operating current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
500 mA	65 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	26,000 h	37,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
1,050 mA	65 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	26,000 h	37,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
1,400 mA	65 °C	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	13,000 h	20,000 h	31,000 h	50,000 h	51,000 h	>55,000 h

SLE G7 21mm 6000lm EXC

Operating current	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
700 mA	65 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	40,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	26,000 h	37,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
1,400 mA	65 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	50,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	26,000 h	37,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
2,000 mA	65 °C	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	85 °C	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h	>55,000 h
	105 °C	13,000 h	20,000 h	31,000 h	50,000 h	51,000 h	>55,000 h

5. Electrical values

5.1 Declaration of electrical parameters

Irated ... Nominal operating current the module is designed for.

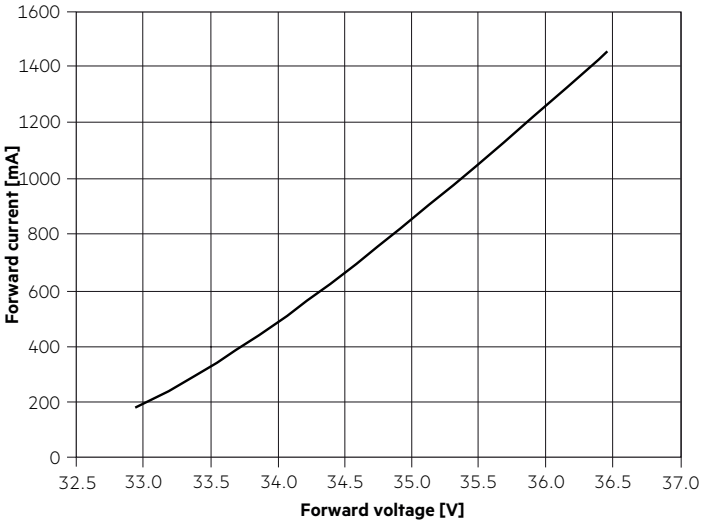
Imax ... Max. permissible continuous operating current incl. The tolerances of the LED driver.

Max. permissible LF current ripple ... Max. output current of the LED driver incl. Tolerances and LF current ripple must not exceed this value.

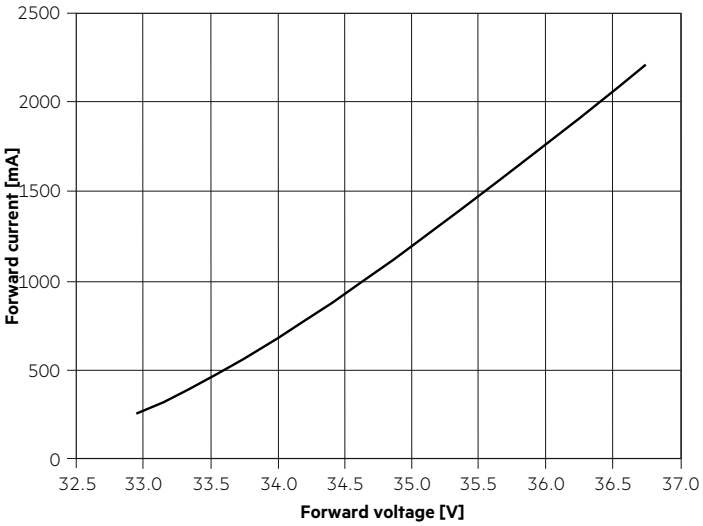
Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

5.2 Typ. forward voltage vs. forward current

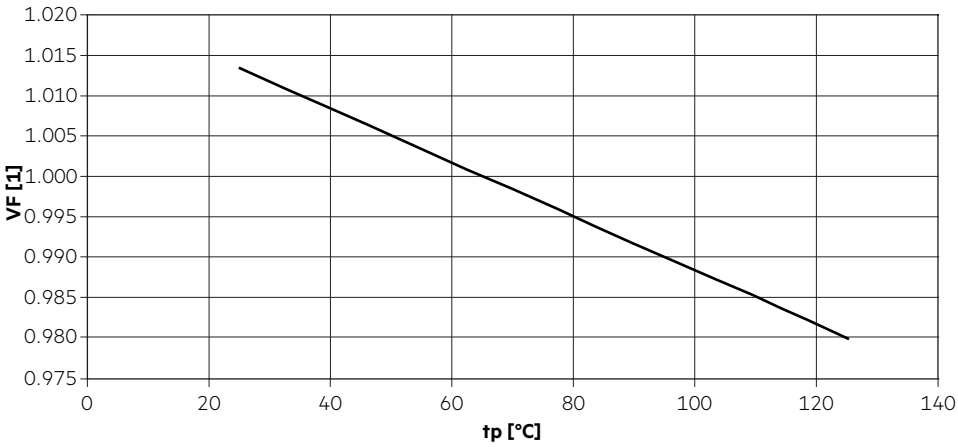
SLE G7 17mm 5000lm xxx EXC



SLE G7 21mm 6000lm xxx EXC



5.3 Forward voltage vs. tp temperature



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

6. Photometric characteristics

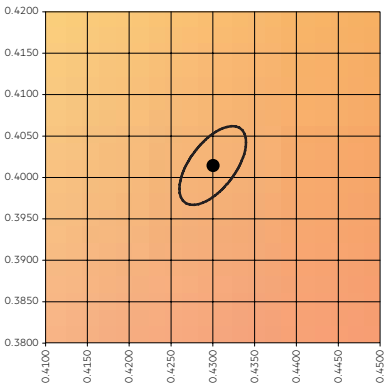
6.1 Coordinates and tolerances according to CIE 1931 and colour rendering

The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.
The ambient temperature of the measurement is ta = 25 °C. The measurement tolerance of the colour coordinates are ± 0.01.

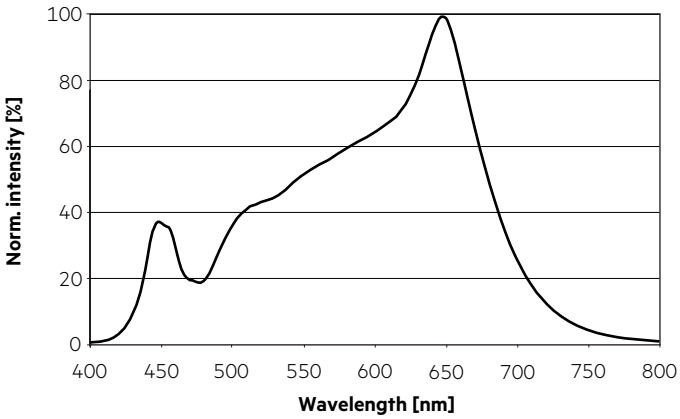
Module type	Current impulse
SLE G7 17mm 5000lm EXC	1,050 mA
SLE G7 21mm 6000lm EXC	1,400 mA

3,100 K – CRI90

	x0	y0
Centre	0.4300	0.4016



MacAdam ellipse: 2SDCM



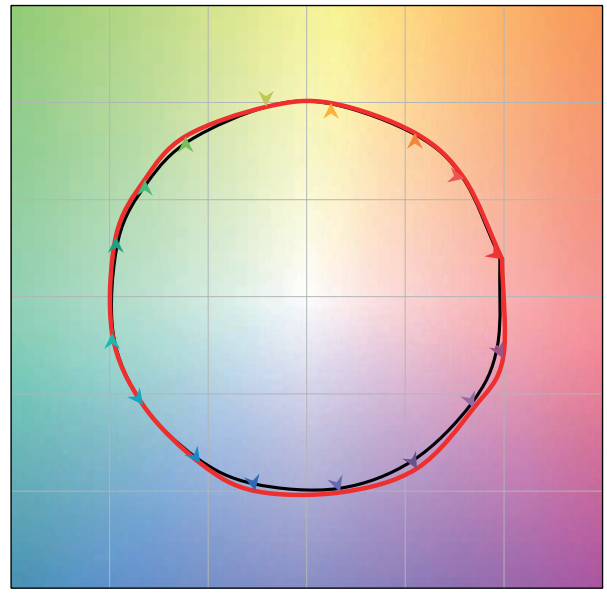
Unique light quality – listing of the Ri values*

Colour temperature	Ra8	Ri01	Ri02	Ri03	Ri04	Ri05	Ri06	Ri07	Ri08	Ri09	Ri10	Ri11	Ri12	Ri13	Ri14
3,000 K	97	98	99	95	96	98	98	97	95	90	99	93	92	99	97

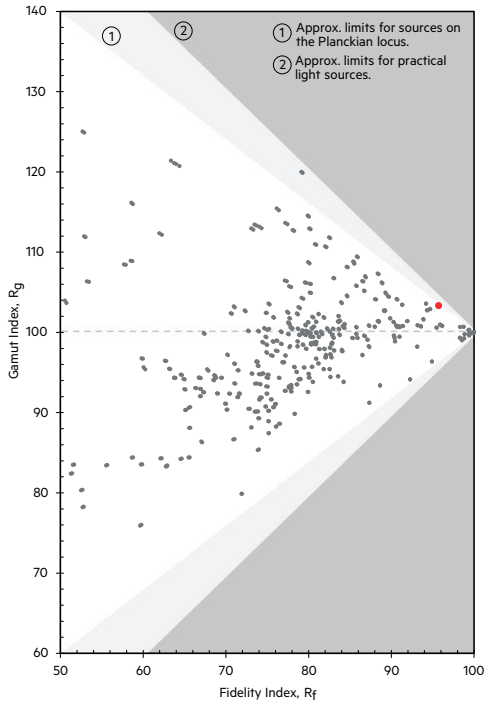
* Approximate values – Deviations can occur caused phosphor mixtures.

TM30		CRI	
Rf	Rg	Ra	R9
96	103	97	90

Colour vector graphic

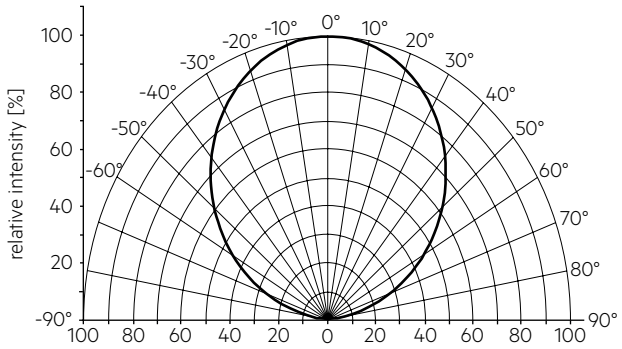


Reference source
Test source

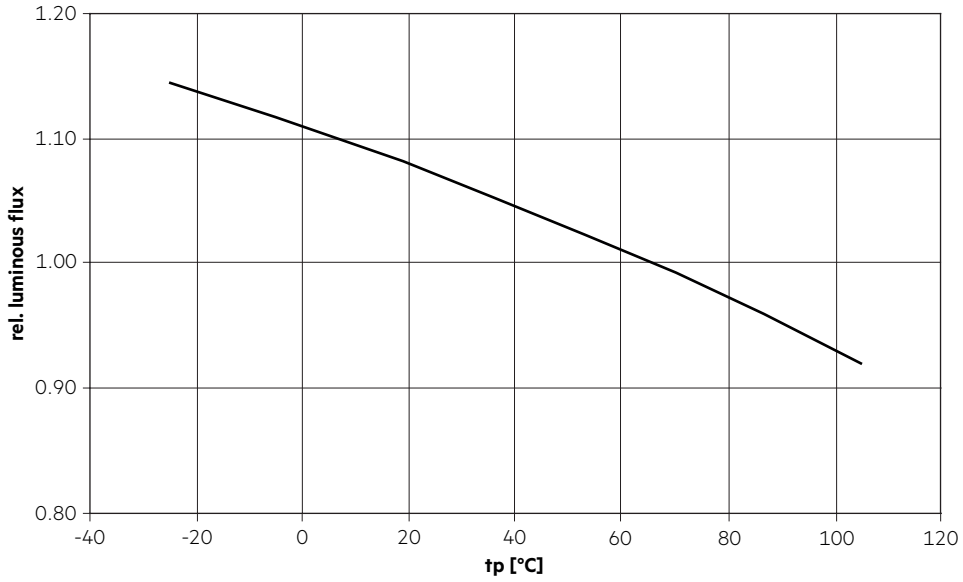


6.2 Light distribution

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

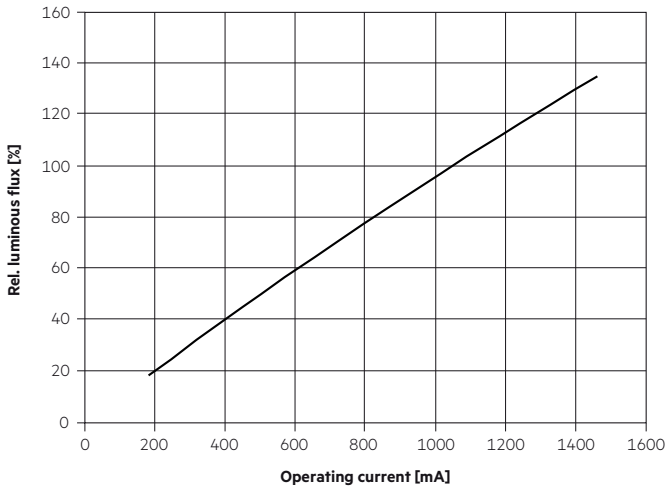


6.3 Relative luminous flux vs. tp temperature

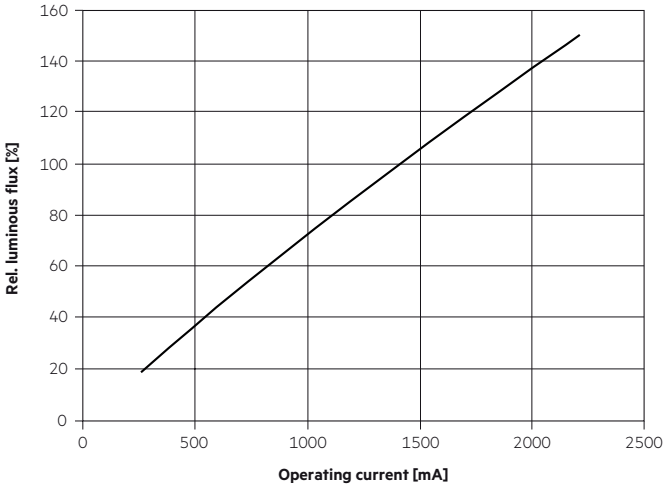


6.4 Relative luminous flux vs. operating current

SLE G7 17mm 5000lm xxx EXC



SLE G7 21mm 6000lm xxx EXC



7. Miscellaneous

7.1 Additional information

Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim.

Colour rendering information are typical values and represent no warranty claim.