



Module SLE G6 FOOD EXC
Module SLE EXCITE

Product description

- Application specific colours for attractive product presentation
- For spotlights and downlights
- ENEC+ for all module types
- Housing with Snap-On feature for easy reflector mounting
- 50 mm housing with 35 mm mounting hole distance acc. to Zhaga
- Luminous flux up to 8,180 lm at $t_p = 65\text{ }^\circ\text{C}$
- High colour consistency
- 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



LES19 + LES23 with housing



LES19 + LES23



Standards, page 4

Colour temperatures and tolerances, page 11



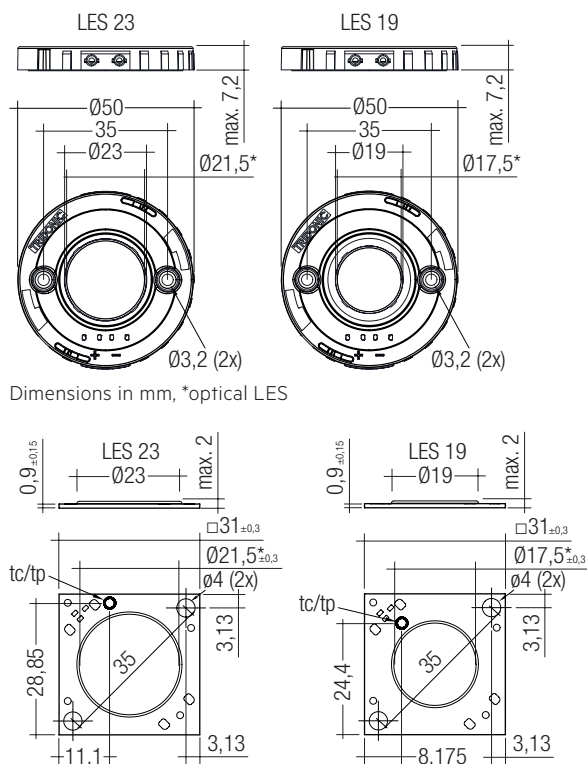


Module SLE G6 FOOD EXC

Module SLE EXCITE

Technical data

Beam characteristic	115°
Ambient temperature range	-25 ... +50 °C
tp rated	65 °C
tc [®]	Up to 100 °C
Max. allowed Silicon temperature	150 °C
Irated for LES19	1,050 mA
Irated for LES23	1,400 mA
Imax for LES19	1,400 mA
Imax for LES23	2,000 mA
Max. DC forward current for LES19 [®]	1,680 mA
Max. DC forward current for LES23 [®]	2,400 mA
Max. permissible LF current ripple for LES19	1,680 mA
Max. permissible LF current ripple for LES23	2,400 mA
Max. permissible peak current for LES19	2,520 mA / max. 8 ms
Max. permissible peak current for LES23	3,600 mA / max. 8 ms
Max. working voltage for insulation nonSELV [®]	50 V
Max. working voltage for insulation SELV [®]	75 V
Insulation test voltage	0.5 kV
CTI of the printed circuit board	< 600 V
ESD classification	Severity level 4
Risk group (EN 62471:2008)	RG1
Risk group (EN 62471:2008) for FISH, FRESH MEAT LES19	RG2 (Ethr = 699 lx, RG1 at d ≥ 180 cm)
Risk group (EN 62471:2008) for FISH, FRESH MEAT LES23	RG2 (Ethr = 672 lx, RG1 at d ≥ 220 cm)
Type of protection	IP00



Dimensions in mm, *optical LES

Dimensions in mm, *optical LES

Ordering data

Type	Article number	Housing	Connection cable	Packaging	Weight per pc.
SLE G6 19mm 5000lm FISH C EXC	89602803	no	yes	20 pc(s).	0.008 kg
SLE G6 19mm 5000lm FISH H EXC	89602819	yes	no	50 pc(s).	0.007 kg
SLE G6 19mm 5000lm GOLD C EXC	89602804	no	yes	20 pc(s).	0.008 kg
SLE G6 19mm 5000lm GOLD H EXC	89602795	yes	no	50 pc(s).	0.007 kg
SLE G6 19mm 5000lm GOLD+ C EXC	89602805	no	yes	20 pc(s).	0.008 kg
SLE G6 19mm 5000lm GOLD+ H EXC	89602797	yes	no	50 pc(s).	0.007 kg
SLE G6 19mm 5000lm MEAT+ C EXC	89602799	no	yes	20 pc(s).	0.008 kg
SLE G6 19mm 5000lm MEAT+ H EXC	89602790	yes	no	50 pc(s).	0.007 kg
SLE G6 19mm 5000lm FRESH MEAT C EXC	89602785	no	yes	20 pc(s).	0.008 kg
SLE G6 19mm 5000lm FRESH MEAT H EXC	89602786	yes	no	50 pc(s).	0.007 kg
SLE G6 23mm 6000lm FISH C EXC	89602806	no	yes	20 pc(s).	0.008 kg
SLE G6 23mm 6000lm FISH H EXC	89602820	yes	no	50 pc(s).	0.007 kg
SLE G6 23mm 6000lm GOLD C EXC	89602807	no	yes	20 pc(s).	0.008 kg
SLE G6 23mm 6000lm GOLD H EXC	89602793	yes	no	50 pc(s).	0.007 kg
SLE G6 23mm 6000lm GOLD+ C EXC	89602808	no	yes	20 pc(s).	0.008 kg
SLE G6 23mm 6000lm GOLD+ H EXC	89602792	yes	no	50 pc(s).	0.007 kg
SLE G6 23mm 6000lm MEAT+ C EXC	89602798	no	yes	20 pc(s).	0.008 kg
SLE G6 23mm 6000lm MEAT+ H EXC	89602788	yes	no	50 pc(s).	0.007 kg
SLE G6 23mm 6000lm FRESH MEAT C EXC	89602801	no	yes	20 pc(s).	0.008 kg
SLE G6 23mm 6000lm FRESH MEAT H EXC	89602794	yes	no	50 pc(s).	0.007 kg

Specific technical data

Type [®]	Forward current	Luminous flux at tp = 25 °C ^①	Luminous flux at tp = 65 °C ^②	Power consumption at tp = 65 °C ^③	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C
SLE 19mm 5000lm – Operating mode HE at 500 mA						
SLE G6 19mm 5000lm FISH EXC	500 mA	2,450 lm	2,320 lm	16.8 W	30.7 V	37.3 V
SLE G6 19mm 5000lm GOLD EXC	500 mA	2,300 lm	2,030 lm	16.8 W	30.7 V	37.3 V
SLE G6 19mm 5000lm GOLD+ EXC	500 mA	1,610 lm	1,470 lm	16.8 W	30.7 V	37.3 V
SLE G6 19mm 5000lm MEAT+ EXC	500 mA	1,520 lm	1,430 lm	16.8 W	30.7 V	37.3 V
SLE G6 19mm 5000lm FRESH MEAT EXC	500 mA	1,540 lm	1,340 lm	16.8 W	30.7 V	37.3 V
SLE 19mm 5000lm – Operating mode NM at 1,050 mA						
SLE G6 19mm 5000lm FISH EXC	1,050 mA	4,760 lm	4,520 lm	37.8 W	33.0 V	40.1 V
SLE G6 19mm 5000lm GOLD EXC	1,050 mA	4,470 lm	4,070 lm	37.8 W	33.0 V	40.1 V
SLE G6 19mm 5000lm GOLD+ EXC	1,050 mA	3,140 lm	2,860 lm	37.8 W	33.0 V	40.1 V
SLE G6 19mm 5000lm MEAT+ EXC	1,050 mA	2,950 lm	2,770 lm	37.8 W	33.0 V	40.1 V
SLE G6 19mm 5000lm FRESH MEAT EXC	1,050 mA	3,000 lm	2,610 lm	37.8 W	33.0 V	40.1 V
SLE 19mm 5000lm – Operating mode HO at 1,400 mA						
SLE G6 19mm 5000lm FISH EXC	1,400 mA	6,040 lm	5,730 lm	52.5 W	34.3 V	41.7 V
SLE G6 19mm 5000lm GOLD EXC	1,400 mA	5,670 lm	5,160 lm	52.5 W	34.3 V	41.7 V
SLE G6 19mm 5000lm GOLD+ EXC	1,400 mA	3,980 lm	3,680 lm	52.5 W	34.3 V	41.7 V
SLE G6 19mm 5000lm MEAT+ EXC	1,400 mA	3,740 lm	3,520 lm	52.5 W	34.3 V	41.7 V
SLE G6 19mm 5000lm FRESH MEAT EXC	1,400 mA	3,800 lm	3,310 lm	52.5 W	34.3 V	41.7 V
SLE 23mm 6000lm – Operating mode HE at 700 mA						
SLE G6 23mm 6000lm FISH EXC	700 mA	3,460 lm	3,290 lm	23.4 W	30.6 V	37.2 V
SLE G6 23mm 6000lm GOLD EXC	700 mA	3,250 lm	2,960 lm	23.4 W	30.6 V	37.2 V
SLE G6 23mm 6000lm GOLD+ EXC	700 mA	2,280 lm	2,080 lm	23.4 W	30.6 V	37.2 V
SLE G6 23mm 6000lm MEAT+ EXC	700 mA	2,140 lm	2,020 lm	23.4 W	30.6 V	37.2 V
SLE G6 23mm 6000lm FRESH MEAT EXC	700 mA	2,180 lm	1,900 lm	23.4 W	30.6 V	37.2 V
SLE 23mm 6000lm – Operating mode NM at 1,400 mA						
SLE G6 23mm 6000lm FISH EXC	1,400 mA	6,410 lm	6,090 lm	49.9 W	32.6 V	39.6 V
SLE G6 23mm 6000lm GOLD EXC	1,400 mA	6,030 lm	5,490 lm	49.9 W	32.6 V	39.6 V
SLE G6 23mm 6000lm GOLD+ EXC	1,400 mA	4,230 lm	3,850 lm	49.9 W	32.6 V	39.6 V
SLE G6 23mm 6000lm MEAT+ EXC	1,400 mA	3,980 lm	3,740 lm	49.9 W	32.6 V	39.6 V
SLE G6 23mm 6000lm FRESH MEAT EXC	1,400 mA	4,040 lm	3,520 lm	49.9 W	32.6 V	39.6 V
SLE 23mm 6000lm – Operating mode HO at 2,000 mA						
SLE G6 23mm 6000lm FISH EXC	2,000 mA	8,610 lm	8,180 lm	74.8 W	34.2 V	41.6 V
SLE G6 23mm 6000lm GOLD EXC	2,000 mA	8,090 lm	7,360 lm	74.8 W	34.2 V	41.6 V
SLE G6 23mm 6000lm GOLD+ EXC	2,000 mA	5,680 lm	5,170 lm	74.8 W	34.2 V	41.6 V
SLE G6 23mm 6000lm MEAT+ EXC	2,000 mA	5,340 lm	5,020 lm	74.8 W	34.2 V	41.6 V
SLE G6 23mm 6000lm FRESH MEAT EXC	2,000 mA	5,420 lm	4,720 lm	74.8 W	34.2 V	41.6 V

^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 HE ... high efficiency, NM ... nominal mode, HO ... high output.

^⑥ Application specific colours for attractive product presentation, see data sheet section 6.1.

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 850 °C passed.

1.2 Photometric code

Key for photometric code, e. g. 830 / 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 initial	McAdam 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 %

1.3 Energy classification

Type	Forward current	Energy classification
SLE G6 19mm 5000lm FISH EXC	500 mA	A++
	1,050 mA	A+
	1,400 mA	A+
SLE G6 19mm 5000lm GOLD EXC	500 mA	A+
	1,050 mA	A+
	1,400 mA	A
SLE G6 19mm 5000lm GOLD+ EXC	500 mA	A
	1,050 mA	A
	1,400 mA	B
SLE G6 19mm 5000lm MEAT+ EXC	500 mA	A
	1,050 mA	A
	1,400 mA	B
SLE G6 19mm 5000lm FRESH MEAT EXC	700 mA	A
	1,050 mA	A
	1,400 mA	B
SLE G6 23mm 6000lm FISH EXC	700 mA	A++
	1,400 mA	A+
	2,000 mA	A+
SLE G6 23mm 6000lm GOLD EXC	700 mA	A+
	1,400 mA	A+
	2,000 mA	A+
SLE G6 23mm 6000lm GOLD+ EXC	700 mA	A
	1,400 mA	A
	2,000 mA	B
SLE G6 23mm 6000lm MEAT+ EXC	700 mA	A
	1,400 mA	A
	2,000 mA	A
SLE G6 23mm 6000lm FRESH MEAT EXC	700 mA	A
	1,400 mA	A
	2,000 mA	A

2. Thermal details

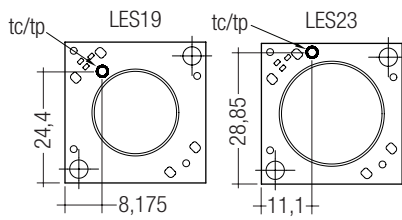
2.1 tp point, ambient temperature and life-time

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

For SLE G6 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.



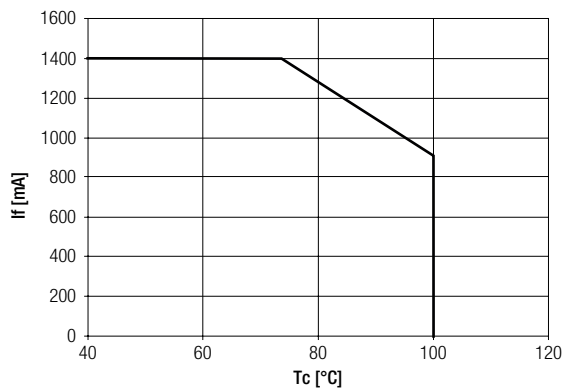
2.2 Storage and humidity

storage temperature	-30...+80°C
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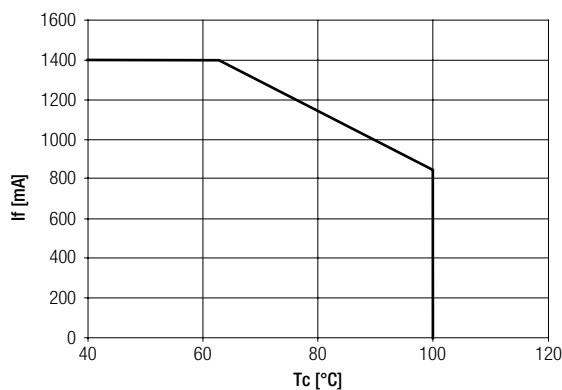
Operation only in non condensing environment.
Humidity during processing of the module should be between 30 to 70 %.

2.3 Derating curves

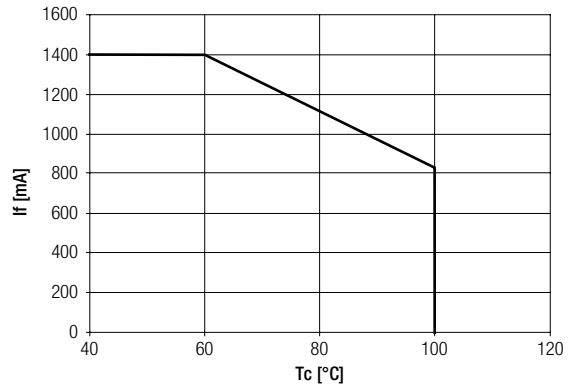
SLE G6 19mm 5000lm FISH EXC



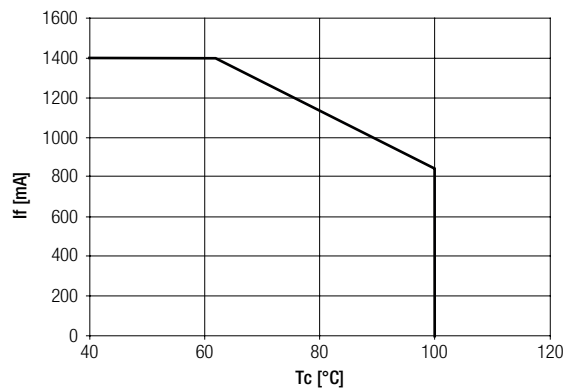
SLE G6 19mm 5000lm GOLD EXC



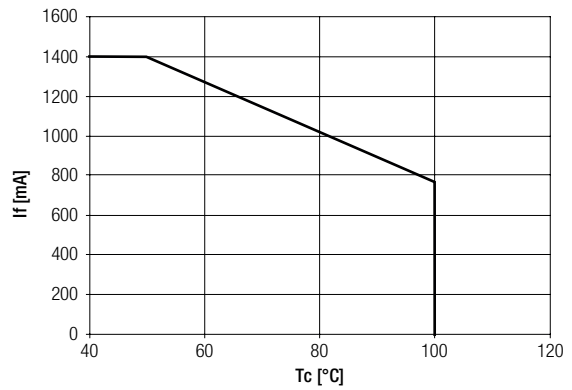
SLE G6 19mm 5000lm GOLD+ EXC



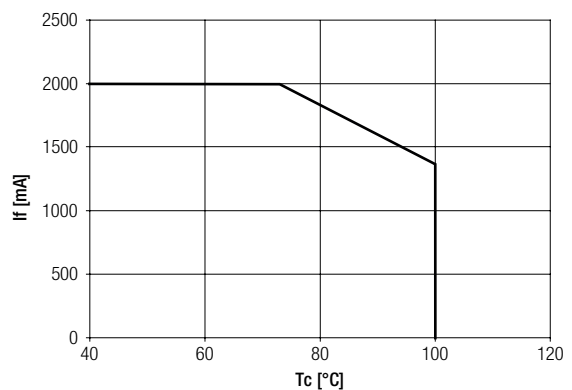
SLE G6 19mm 5000lm MEAT+ EXC

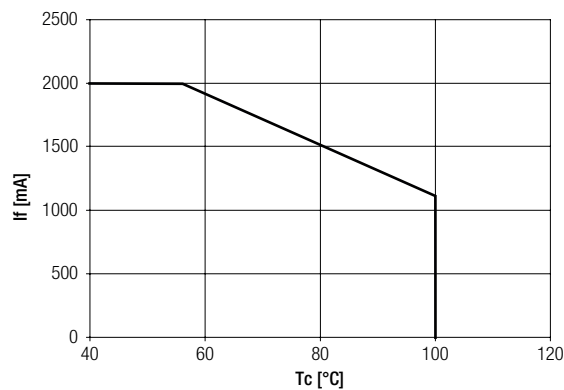
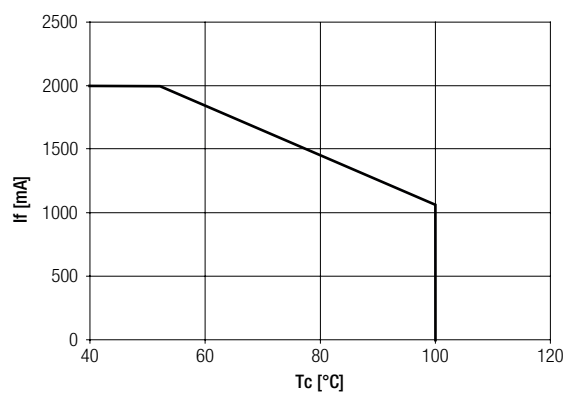
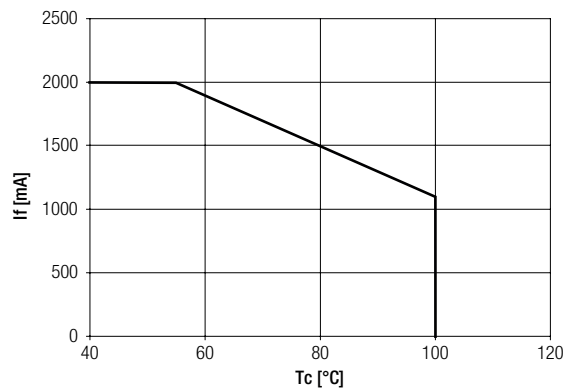
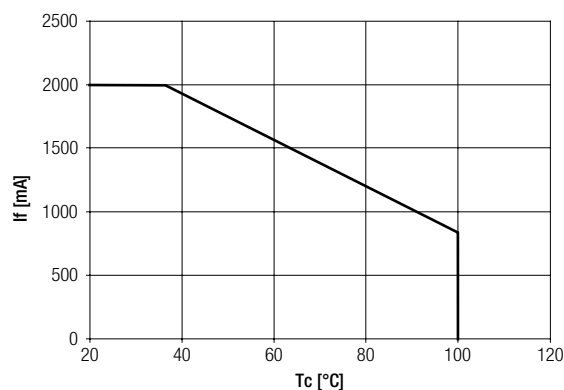


SLE G6 19mm 5000lm FRESH MEAT EXC



SLE G6 23mm 6000lm FISH EXC



SLE G6 23mm 6000lm GOLD EXC**SLE G6 23mm 6000lm GOLD+ EXC****SLE G6 23mm 6000lm MEAT+ EXC****SLE G6 23mm 6000lm FRESH MEAT 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 G6 will be greatly reduced or the SLE G6 may be destroyed.

2.5 Heat sink values**SLE G6 19mm 5000lm xxxx EXCITE**

ta	tp	Operating current	R _{th, hs-a}
25°C	65°C	500 mA	3.83 K/W
30°C	65°C	500 mA	3.34 K/W
40°C	65°C	500 mA	2.35 K/W
50°C	65°C	500 mA	1.36 K/W
25°C	65°C	1,050 mA	1.48 K/W
30°C	65°C	1,050 mA	1.28 K/W
40°C	65°C	1,050 mA	0.88 K/W
50°C	65°C	1,050 mA	0.48 K/W
25°C	65°C	1,400 mA	0.99 K/W
30°C	65°C	1,400 mA	0.85 K/W
40°C	65°C	1,400 mA	0.58 K/W
50°C	65°C	1,400 mA	0.30 K/W

SLE G6 23mm 6000lm xxxx EXCITE

ta	tp	Operating current	R _{th, hs-a}
25°C	65°C	700 mA	2.73 K/W
30°C	65°C	700 mA	2.38 K/W
40°C	65°C	700 mA	1.66 K/W
50°C	65°C	700 mA	0.95 K/W
25°C	65°C	1,400 mA	1.11 K/W
30°C	65°C	1,400 mA	0.96 K/W
40°C	65°C	1,400 mA	0.65 K/W
50°C	65°C	1,400 mA	0.34 K/W
25°C	65°C	1,750 mA	0.81 K/W
30°C	65°C	1,750 mA	0.69 K/W
40°C	65°C	1,750 mA	0.46 K/W
50°C	65°C	1,750 mA	0.23 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 G6 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.

Additionally the SLE G6 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

SLE G6 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 G6 guarantees the necessary protection for safe and reliable operation.

If a LED Driver other than Tridonic is used, it must provide the following protection:

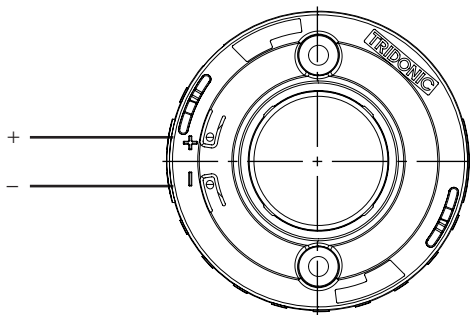
- Short-circuit protection
- Overload protection
- Overtemperature protection

! SLE G6 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 G6.

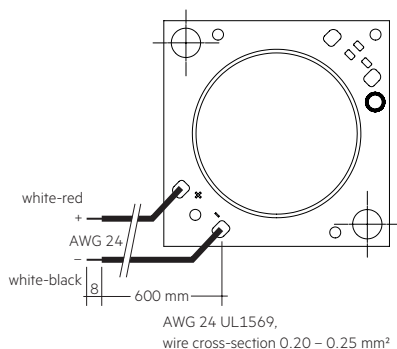
! SLE G6 are basic isolated up to 75 V SELV / 50 V nonSELV against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 75 V SELV / 50 V nonSELV, an additional isolation between LED module and heat sink 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

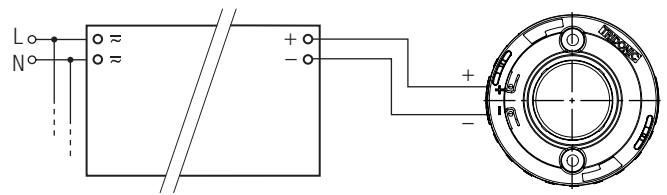
Wiring with housing



Wiring without housing



Wiring example



TALEXdriver LC...

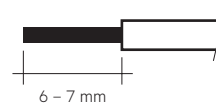
3.3 Wiring type and cross section

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 (6 – 7 mm).

Loosen wire through twisting and pulling.

wire preparation:



3.4 Mounting instruction

! SLE G6 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 G6 (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 SLE GEN6".

! 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 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

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

SLE G6 19mm 5000lm xxxx EXCITE

Operating current	tp temperature	L80 / F10	L80 / F50	L70 / F10	L70 / F50
500 mA	65 °C	51,000 h	>60,000 h	>60,000 h	>60,000 h
	75 °C	44,000 h	>60,000 h	>60,000 h	>60,000 h
	85 °C	39,000 h	58,000 h	>60,000 h	>60,000 h
1,050 mA	65 °C	42,000 h	>60,000 h	>60,000 h	>60,000 h
	75 °C	37,000 h	55,000 h	59,000 h	>60,000 h
	85 °C	32,000 h	49,000 h	52,000 h	>60,000 h
1,400 mA	65 °C	37,000 h	55,000 h	59,000 h	>60,000 h
	75 °C	32,000 h	48,000 h	51,000 h	>60,000 h
	85 °C	28,000 h	42,000 h	45,000 h	>60,000 h

SLE G6 23mm 6000lm xxxx EXCITE

Operating current	tp temperature	L80 / F10	L80 / F50	L70 / F10	L70 / F50
700 mA	65 °C	51,000 h	>60,000 h	>60,000 h	>60,000 h
	75 °C	44,000 h	>60,000 h	>60,000 h	>60,000 h
	85 °C	39,000 h	58,000 h	>60,000 h	>60,000 h
1,400 mA	65 °C	43,000 h	>60,000 h	>60,000 h	>60,000 h
	75 °C	38,000 h	57,000 h	>60,000 h	>60,000 h
	85 °C	33,000 h	50,000 h	53,000 h	>60,000 h
2,000 mA	65 °C	37,000 h	55,000 h	59,000 h	>60,000 h
	75 °C	32,000 h	48,000 h	51,000 h	>60,000 h
	85 °C	28,000 h	42,000 h	45,000 h	>60,000 h

5. Electrical values

5.1 Declaration of electrical parameters

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

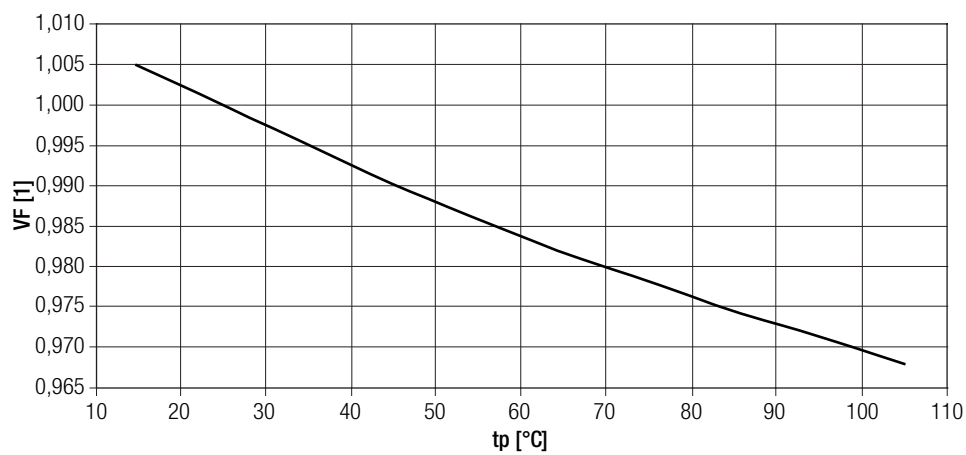
I_{max} ... Max. permissible continuous operating current.

Max. DC forward current ... Max. permissible continuous operating current incl. The tolerances of the LED driver. LED module may be destroyed if this value is exceeded.

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 Forward voltage vs. tp temperature

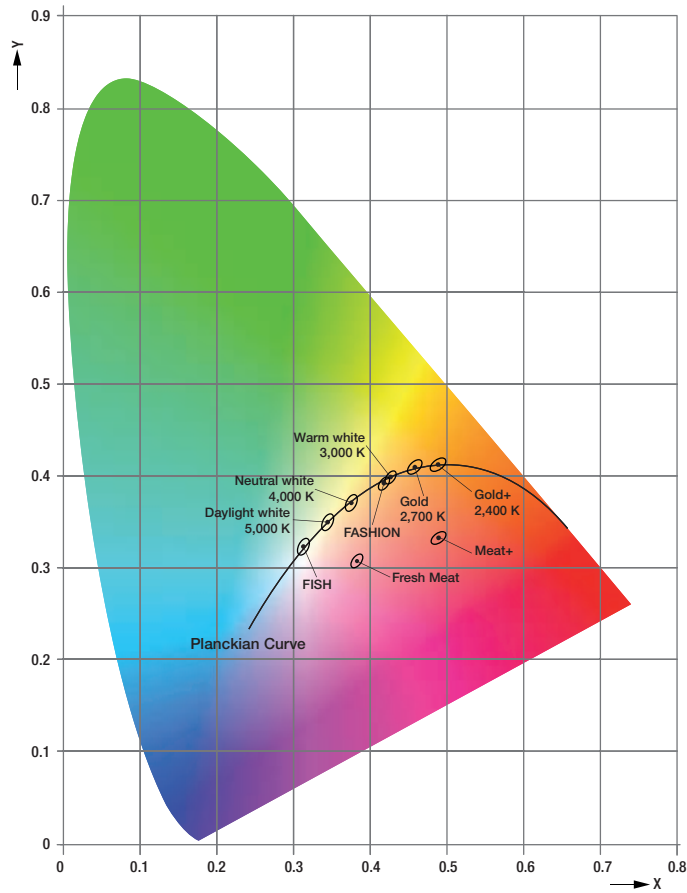


The diagrams based on statistic values.
The real values can be different.

6. Photometric characteristics

6.1 Application specific colours for attractive product presentation

- Gold: This product emits a warm and brilliant light. This light colour is ideal for bakery goods or jewellery.
- Gold+: This light colour has a light brown tinge to give an oven-fresh appearance to crusty bakery products such as croissants and baguettes.
- Fresh Meat: The perfect light colour for the meat counter. White threads in the meat are not highlighted by this light colour but the red of the meat looks really appetising.
- Meat+: Fresh and cooked meats have a saturated red colour under this light. Even white threads appear red. A boost of red for the meat counter.



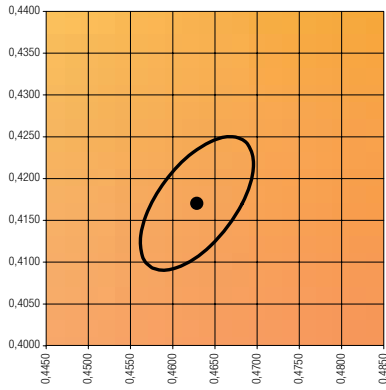
6.2 Coordinates and tolerances according to CIE 1931

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 G6 19mm 5000lm xxxx EXC	1,050 mA
TALEXmodule SLE G6 23mm 6000lm xxxx EXC	1,400 mA

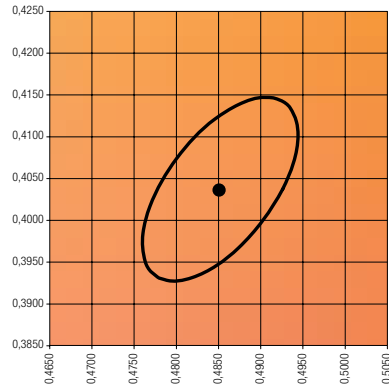
The ambient temperature of the measurement is $t_a = 25^\circ\text{C}$.
The measurement tolerance of the colour coordinates are ± 0.01 .

GOLD



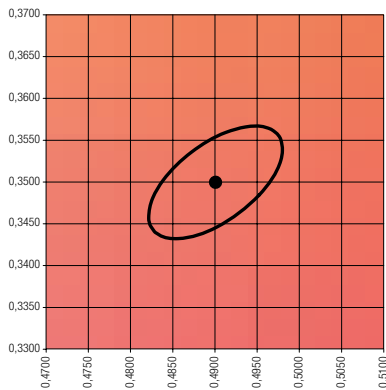
MacAdam ellipse: 3SDCM

GOLD+



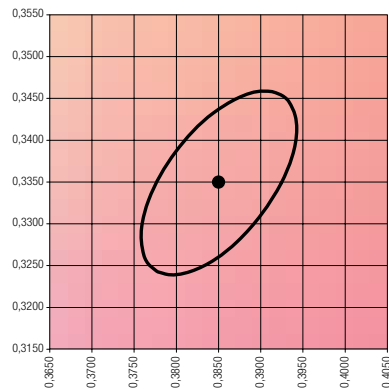
MacAdam ellipse: 4SDCM

MEAT+



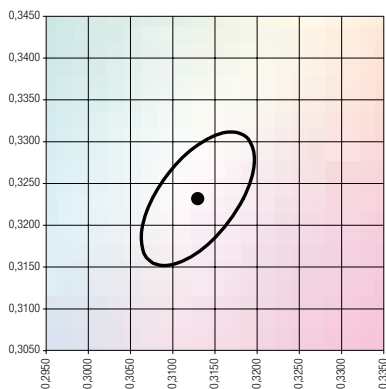
MacAdam ellipse: 3SDCM

Fresh Meat



MacAdam ellipse: 4SDCM

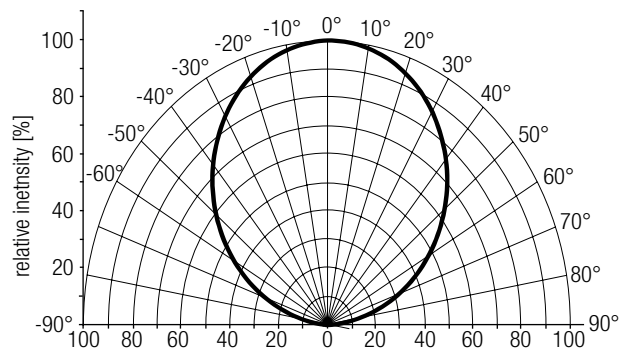
FISH



MacAdam ellipse: 3SDCM

6.2 Light distribution

The optical design of the SLE product line ensures optimum homogeneity 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

