



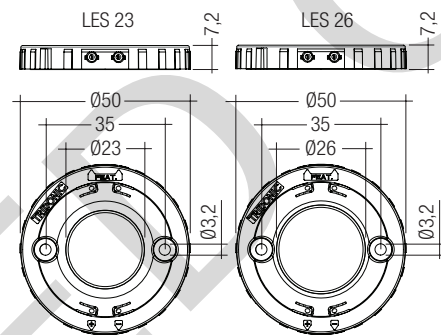
## TALEXmodule STARK SLE GEN2 FOOD STARK SLE

### Product description

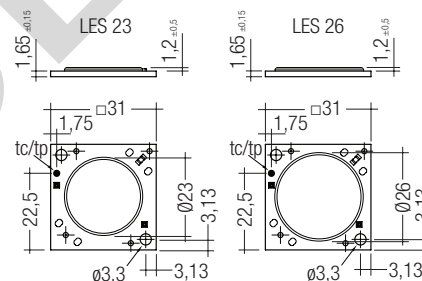
- Application specific colours for attractive product presentation
- For spotlights
- High efficiency up to 95 lm/W for the LED module
- High system efficiency up to 77 lm/W at  $t_p = 65\text{ °C}$
- High colour consistency
- Small LES (light emitting surface) diameter enables small beam angle for spotlights
- Excellent thermal management by COB technology
- NTC for temperature control for type LES23 and LES26
- Uniform radiation with DAM&Fill technology
- Fixing holes for M3 screws
- Built-in LED module
- Cooling required
- Long life time: L70 at  $> 50,000$  operating hours
- Flexible operating modes

### Technical data

Beam characteristic	140°
Ambient temperature $t_a$	-25 ... +55 °C
$t_p$ rated temperature <sup>①</sup>	65 °C
Max. tc point temperature <sup>②</sup>	75 °C
Risk group (EN 62471:2008)	1
Type of protection	IP00



With housing (tc/tp position same as without housing)



Without housing



Standards, page 4

Colour temperatures and tolerances, page 9

### Ordering data

Type	Article number	Housing	Connection cable	Packaging	Weight per pc.
STARK SLE G2 FOOD LES23 GOLD	89601665	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES23 GOLD+	89601694	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES23 FM	89601695	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES23 MEAT+	89601662	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES26 GOLD	89601668	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES26 GOLD+	89601696	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES26 FM	89601697	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 FOOD LES26 MEAT+	89601678	yes	no	15 pc(s).	0.008 kg
STARK SLE G2 PURE FOOD LES23 GOLD	89601674	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES23 GOLD+	89601698	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES23 FM	89601699	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES23 MEAT+	89601671	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES26 GOLD	89601677	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES26 GOLD+	89601700	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES26 FM	89601701	no	yes	20 pc(s).	0.010 kg
STARK SLE G2 PURE FOOD LES26 MEAT+	89601679	no	yes	20 pc(s).	0.010 kg

Specific technical data

Type <sup>Ⓟ</sup>	Forward current <sup>Ⓟ ④ ⑤</sup>	Luminous flux at tp = 25 °C <sup>Ⓟ</sup>	Luminous flux at tp = 65 °C <sup>Ⓟ</sup>	Power consumption module <sup>Ⓟ</sup>	Forward voltage module <sup>Ⓟ ⑥</sup>	Energy classification
<b>STARK SLE LES23 – Operating mode HE at 500 mA</b>						
STARK SLE G2 FOOD LES23 GOLD	500 mA	1,600 lm	1,400 lm	16.5 W	33.1 V	A
STARK SLE G2 FOOD LES23 GOLD+	500 mA	1,200 lm	1,000 lm	16.5 W	33.1 V	A
STARK SLE G2 FOOD LES23 FM	500 mA	1,100 lm	950 lm	16.5 W	33.1 V	B
STARK SLE G2 FOOD LES23 MEAT+	500 mA	1,100 lm	1,000 lm	16.5 W	33.1 V	A
<b>STARK SLE LES23 – Operating mode NM at 700 mA</b>						
STARK SLE G2 FOOD LES23 GOLD	700 mA	2,150 lm	1,850 lm	23.8 W	33.9 V	A
STARK SLE G2 FOOD LES23 GOLD+	700 mA	1,650 lm	1,400 lm	23.8 W	33.9 V	B
STARK SLE G2 FOOD LES23 FM	700 mA	1,550 lm	1,300 lm	23.8 W	33.9 V	B
STARK SLE G2 FOOD LES23 MEAT+	700 mA	1,500 lm	1,350 lm	23.8 W	33.9 V	B
<b>STARK SLE LES23 – Operating mode HO at 1,050 mA</b>						
STARK SLE G2 FOOD LES23 GOLD	1,050 mA	3,050 lm	2,600 lm	37.1 W	35.3 V	A
STARK SLE G2 FOOD LES23 GOLD+	1,050 mA	2,300 lm	1,900 lm	37.1 W	35.3 V	B
STARK SLE G2 FOOD LES23 FM	1,050 mA	2,150 lm	1,800 lm	37.1 W	35.3 V	B
STARK SLE G2 FOOD LES23 MEAT+	1,050 mA	2,100 lm	1,900 lm	37.1 W	35.3 V	B
<b>STARK SLE LES26 – Operating mode HE at 700 mA</b>						
STARK SLE G2 FOOD LES26 GOLD	700 mA	2,200 lm	1,900 lm	23.2 W	33.2 V	A
STARK SLE G2 FOOD LES26 GOLD+	700 mA	1,750 lm	1,550 lm	23.2 W	33.2 V	A
STARK SLE G2 FOOD LES26 FM	700 mA	1,600 lm	1,350 lm	23.2 W	33.2 V	B
STARK SLE G2 FOOD LES26 MEAT+	700 mA	1,500 lm	1,350 lm	23.2 W	33.2 V	B
<b>STARK SLE LES26 – Operating mode NM at 1,050 mA</b>						
STARK SLE G2 FOOD LES26 GOLD	1,050 mA	3,150 lm	2,700 lm	36.0 W	34.3 V	A
STARK SLE G2 FOOD LES26 GOLD+	1,050 mA	2,500 lm	2,150 lm	36.0 W	34.3 V	B
STARK SLE G2 FOOD LES26 FM	1,050 mA	2,300 lm	1,950 lm	36.0 W	34.3 V	B
STARK SLE G2 FOOD LES26 MEAT+	1,050 mA	2,200 lm	1,900 lm	36.0 W	34.3 V	B
<b>STARK SLE LES26 – Operating mode HO at 1,400 mA</b>						
STARK SLE G2 FOOD LES26 GOLD	1,400 mA	4,050 lm	3,450 lm	49.5 W	35.3 V	A
STARK SLE G2 FOOD LES26 GOLD+	1,400 mA	3,200 lm	2,750 lm	49.5 W	35.3 V	B
STARK SLE G2 FOOD LES26 FM	1,400 mA	2,950 lm	2,400 lm	49.5 W	35.3 V	B
STARK SLE G2 FOOD LES26 MEAT+	1,400 mA	2,850 lm	2,400 lm	49.5 W	35.3 V	B

Ⓟ If the max. temperature limits are exceeded, the life of the system will be greatly reduced or the system may be damaged.  
The temperature of the TALEX(module) at the tp-point is to be measured in the thermally stable state with a temperature sensor or temperature-sensitive sticker as per EN 60598-1. For the precise position of the tp point see the drawing above.

④ Tolerance range for optical data: ±10 %.

⑤ Exceeding the max. operating current leads to an overload on the TALEX(module). This may in turn result in a significant reduction in lifetime or even destruction of the TALEX(module).

⑥ Max. permissible surge current: 3 A, duration max. 10 µs.

⑦ Ripple max. 50 % of typ. forward current.

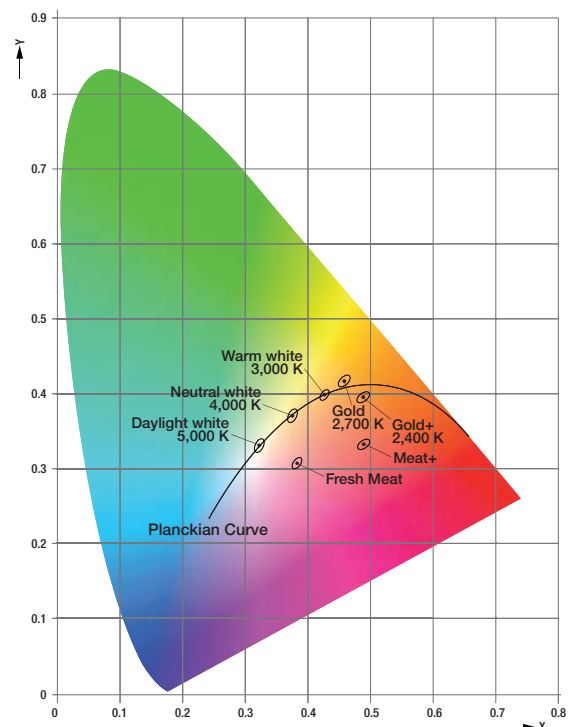
⑧ Tolerance range voltage: ±10 %.

⑨ HE ... high efficiency, NM ... nominal mode, HO ... high output.

⑩ All values at tp = 65 °C.

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.



LED control gear matrix – TALEX(module STARK SLE G2

Type	REMOTE		IN-BUILT
	LCAI 020/0500 A120 one4all	LCI 20W 500mA TEC SR	LCI 20W 500mA TEC C
Article no.	86459107	87500189	87500188
Type	assignable LED control gear		
Operating mode at 500 mA			
STARK SLE G2	✓	✓	✓

LED control gear matrix – TALEX(module STARK SLE G2

Type	REMOTE					
	LCI 030/0700 A120	LCAI 030/0700 A120 one4all	LCI 030/0700 E020	LCI 033/0700 U010	LCI 35W 700mA TEC SR	LCI 030/0700 M120
Article no.	86458901	86458900	24166314	25000669	87500197	86459178
Type	assignable LED control gear					
Operating mode at 700 mA						
STARK SLE G2	✓	✓	✓	✓	✓	✓

LED control gear matrix – TALEX(module STARK SLE G2

Type	REMOTE		IN-BUILT
	LCAI 050/1050 N020 DALI	LCI 050/1050 N020	LCI 35W 700mA TEC C
Article no.	24166469*	24166468*	87500196
Type	assignable LED control gear		
Operating mode at 700 mA			
STARK SLE G2	✓	✓	✓

\* Configuratet for 700 mA, see LED control gear data sheet.

LED control gear matrix – TALEX(module STARK SLE G2

Type	REMOTE					IN-BUILT		
	LCAI 050/1050 N020 DALI	LCI 050/1050 N020	LCI 050/1050 R010	LCI 050/1050 T020	LCI 60W 1050mA TEC SR	LCAI 055/1400 0010 DALI	LCI 055/1400 0010	LCI 60W 1050mA TEC C
Article no.	24166469	24166468	86459216	86459218	87500203	24166471*	24166470*	87500202
Type	assignable LED control gear							
Operating mode at 1,050 mA								
STARK SLE G2	✓	✓	✓	✓	✓	✓	✓	✓

\* Configuratet for 1,050 mA, see LED control gear data sheet.

LED control gear matrix – TALEX(module STARK SLE G2

Type	REMOTE		IN-BUILT		
	LCI 055/1400 T020	LCI 65W 1400mA TEC SR	LCAI 055/1400 0010 DALI	LCI 055/1400 0010	LCI 055/1400 R010
Article no.	86459219	87500205	24166471	24166470	86459217
Type	assignable LED control gear				
Operating mode at 1,400 mA					
STARK SLE G2	✓	✓	✓	✓	✓

**Standards**

EN 62031  
 EN 62471  
 EN 61547  
 EN 55015  
 IEC 62717

**Glow wire test**

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

**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 STARK SLE G2 will be greatly reduced or the TALEX/module STARK SLE G2 may be destroyed.

Therefore the TALEX/module STARK SLE G2 needs to be mounted onto a heat sink.

Tridonic's excellent thermal design for the TALEX/module STARK SLE G2 products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life time.

**tp point, ambient temperature and lifetime**

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

For TALEX/module STARK SLE G2 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.

**Mounting instruction**

TALEX/module STARK SLE G2 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 before installing the TALEX modules to remove all dirt, dust and grease.

None of the components of the TALEX/module STARK SLE G2 (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5 Nm.

The PURE 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 further information please refer to the brochure entitled "Technical Design-In-Guide SLE GEN2".



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.

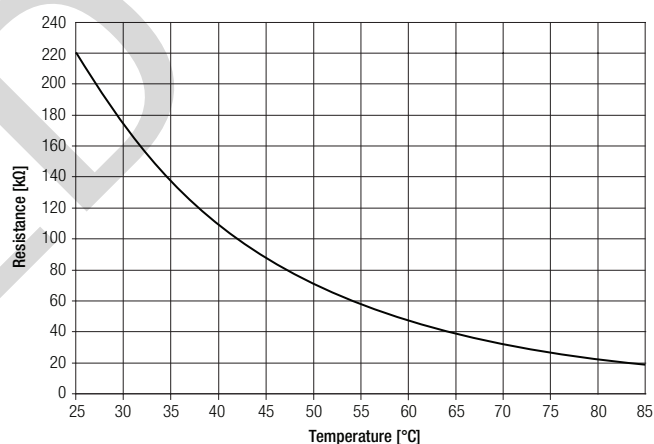
Materials which are used in LED applications (e.g. sealings, adhesives) must not produce dissolver gas. They must not be condensation curing based, acetate curing based or contain sulfur, chlorine or phthalate. Avoid corrosive atmosphere during usage and storage.

**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. Please note the requirements set out in the document EOS / ESD guidelines (Guideline\_EOS\_ESD.pdf) at: <http://www.tridonic.com/com/en/technical-data.asp>

**Temperature control**

An NTC resistor is on the board of the TALEX/module STARK SLE Food Colour to control the tp temperature during the operation with a resistor value of 220 kΩ NTC.

**Electrical supply/choice of LED control gear**

TALEX/module STARK SLE G2 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 control gear which complies with the relevant standards. The use of TALEX LED control gears from Tridonic in combination with TALEX/module STARK SLE G2 guarantees the necessary protection for safe and reliable operation.

If a LED control gear other than Tridonic TALEX/converter is used, it must provide the following protection:

- Short-circuit protection
- Overload protection
- Overtemperature protection



TALEX/module STARK SLE G2 must be supplied by a constant current LED control gear.

Operation with a constant voltage LED control gear will lead to an irreversible damage of the module.

Wrong polarity can damage the TALEX/module STARK SLE G2.

## Heat sink values

### TALEX(module STARK SLE G2 LES23

ta	tp	If	Rth, hs-a
25 °C	65 °C	500 mA	3.00 K/W
30 °C	65 °C	500 mA	2.62 K/W
40 °C	65 °C	500 mA	1.86 K/W
50 °C	65 °C	500 mA	1.10 K/W
25 °C	65 °C	700 mA	1.99 K/W
30 °C	65 °C	700 mA	1.74 K/W
40 °C	65 °C	700 mA	1.23 K/W
50 °C	65 °C	700 mA	0.72 K/W
25 °C	65 °C	1050 mA	1.20 K/W
30 °C	65 °C	1050 mA	1.05 K/W
40 °C	65 °C	1050 mA	0.74 K/W
50 °C	65 °C	1050 mA	0.42 K/W

### TALEX(module STARK SLE G2 LES26

ta	tp	If	Rth, hs-a
25 °C	65 °C	700 mA	2.15 K/W
30 °C	65 °C	700 mA	1.88 K/W
40 °C	65 °C	700 mA	1.33 K/W
50 °C	65 °C	700 mA	0.78 K/W
25 °C	65 °C	1050 mA	1.32 K/W
30 °C	65 °C	1050 mA	1.15 K/W
40 °C	65 °C	1050 mA	0.81 K/W
50 °C	65 °C	1050 mA	0.47 K/W
25 °C	65 °C	1400 mA	0.92 K/W
30 °C	65 °C	1400 mA	0.80 K/W
40 °C	65 °C	1400 mA	0.56 K/W
50 °C	65 °C	1400 mA	0.32 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 STARK SLE G2 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.

Additionally the TALEX(module STARK SLE G2 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  $\mu\text{m}$  or a similar interface material where the quotient of layer thickness and thermal conductivity  $b < 50 \mu\text{mmK/W}$ .

### Thermal behaviour

storage temperature	-30 ... +80 °C
operating temperature ta	+25 ... +55 °C
tp (at typ. current)	65 °C
tc max. (at typ. current)*	75 °C
max. humidity	0 ... 70%

\* according to the derating curves

Condensation on the module is not allowed. During the processing of the LED modules in the lamp the humidity has to be between 30 and 70%.

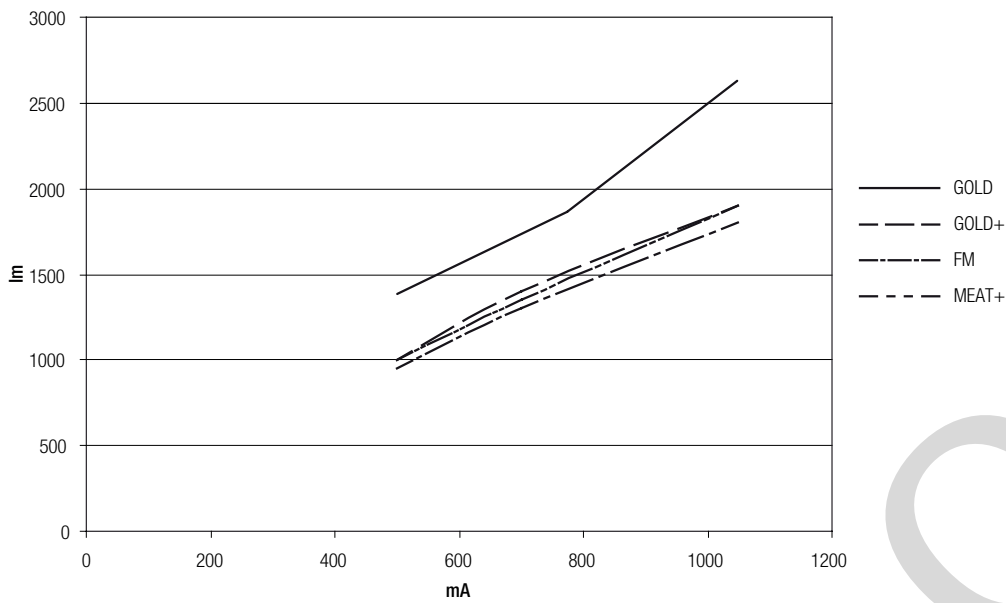
### Lumen maintenance for HE operation

tc temperature in °C	luminous flux in %	operating time in h
25	80	> 50,000
	70	> 50,000
	50	> 50,000
45	80	47,000
	70	> 50,000
	50	> 50,000
65	80	35,000
	70	> 50,000
	50	> 50,000
75	80	30,000
	70	47,000
	50	> 50,000

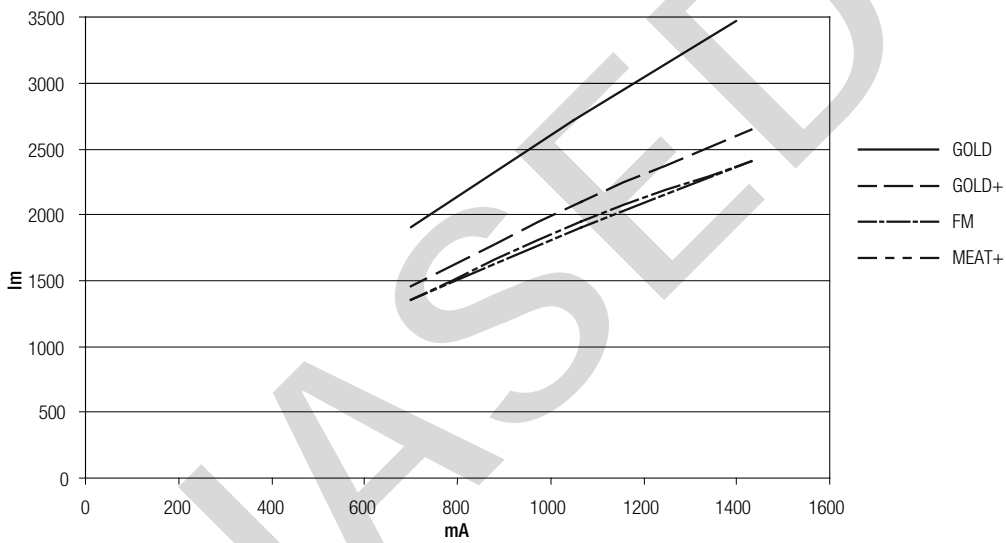
### Lumen maintenance for NM and HO operation

tc temperature in °C	luminous flux in %	operating time in h
25	80	43,000
	70	> 50,000
	50	> 50,000
45	80	35,000
	70	> 50,000
	50	> 50,000
65	80	26,000
	70	42,000
	50	> 50,000
75	80	22,000
	70	35,000
	50	> 50,000

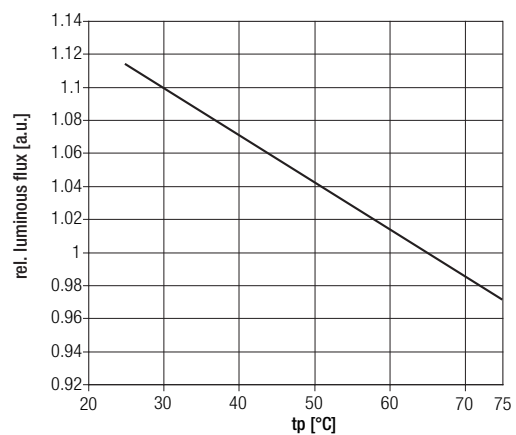
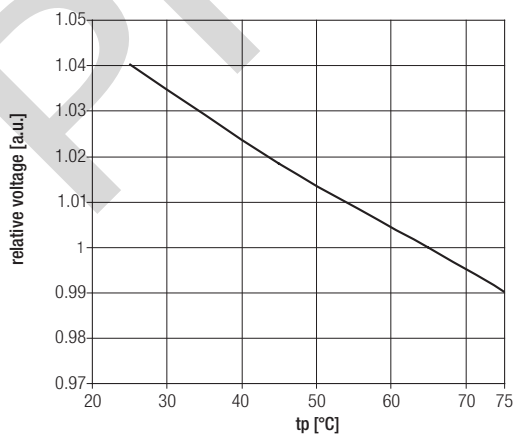
Luminous flux and operating current for LES23 at  $t_p = 65\text{ }^\circ\text{C}$



Luminous flux and operating current for LES26 at  $t_p = 65\text{ }^\circ\text{C}$

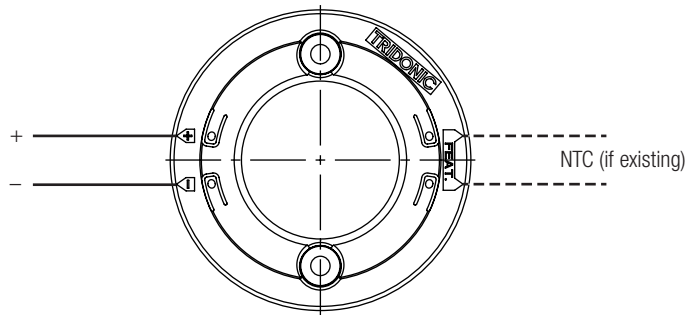


Relative forward voltage and relative luminous flux

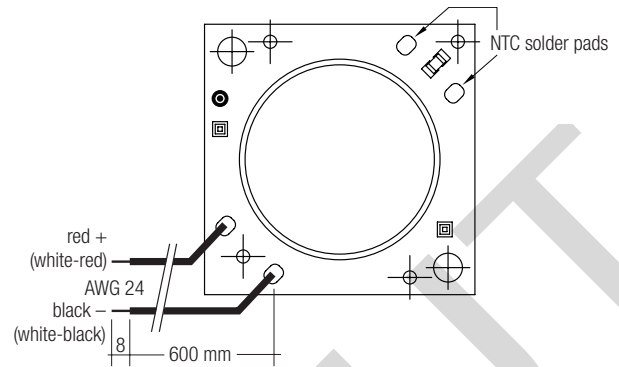


The diagrams based on statistic values.  
The real values can be different.

### Wiring with housing



### Wiring without housing

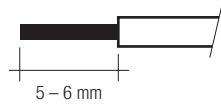


### Wiring type and cross section

The wiring has to be solid cable with a cross section of 0.5 to 0.75 mm<sup>2</sup> or with stranded wire with soldered ends with a cross section of 0.5 mm<sup>2</sup>.  
For the push-wire connection you have to strip the insulation (5 – 6 mm).

Removing wires by lightly pressing on the push button.

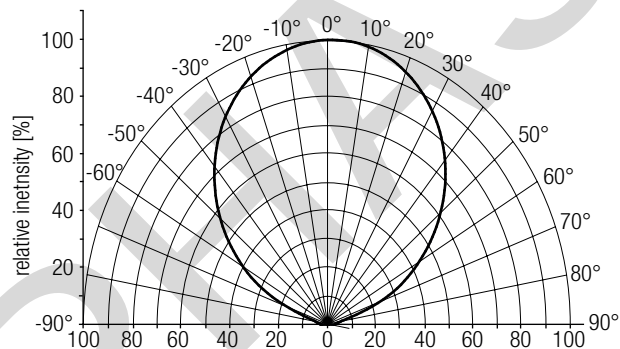
wire preparation:



### Optical characteristics TALEXmodule STARK SLE G2

The optical design of the TALEXmodule STARK SLE G2 product line ensures optimum homogeneity for the light distribution.

### Light distribution



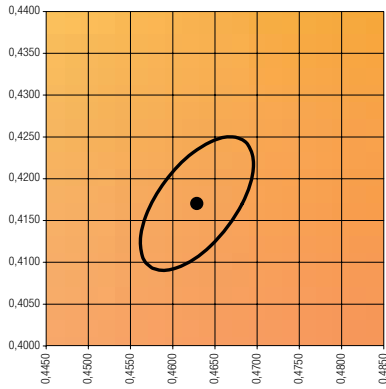
For further information see Design-in Guide, 3D data and photometric data on [www.tridonic.com](http://www.tridonic.com) or on request.



### Coordinates and tolerances according to CIE 1931

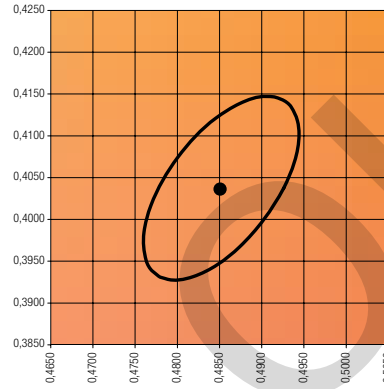
The specified colour coordinates are measured integral by a current impulse with nominal values of module after a settling time of 100 ms.  
The ambient temperature of the measurement is  $t_a = 25\text{ }^\circ\text{C}$ .  
The measurement tolerance of the colour coordinates are  $\pm 0.01$ .

#### Gold



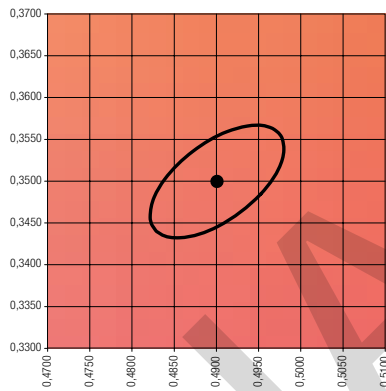
MacAdam ellipse: 3SDCM

#### Gold+



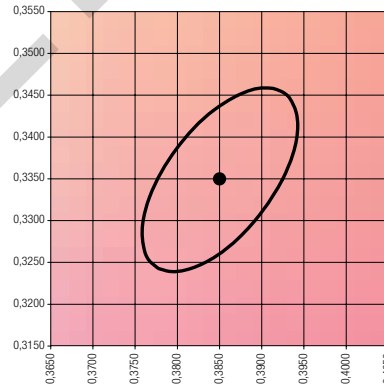
MacAdam ellipse: 4SDCM

#### Meat+



MacAdam ellipse: 3SDCM

#### Fresh Meat



MacAdam ellipse: 4SDCM