



TALEXmodule STARK SLE GEN3 CLASSIC STARK SLE

Product description

- For spotlights and downlights
- Luminous flux range from 1,300 – 6,900 lm
- High efficiency up to 134 lm/W for the LED module
- High system efficiency up to 113 lm/W at $t_p = 65\text{ °C}$
- BLO operation mode: Best LED Operation for optimum operation and constant luminous flux at all colour temperatures in combination with Tridonic LED control gear of TOP and ECO series
- High colour consistency (MacAdams 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

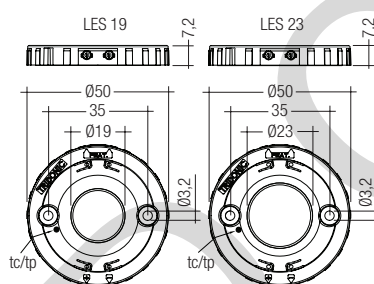
Technical data

Beam characteristic	140°
Ambient temperature t_a	-25 ... +50 °C
t_p rated temperature ^①	65 °C
Max. tc point temperature ^①	up to 90 °C
Risk group (EN 62471:2008)	1
Type of protection	IP00

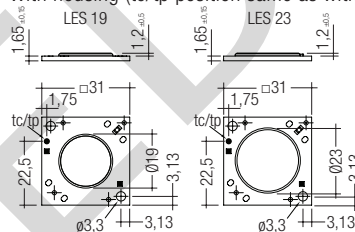
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With housing (tc/tp position same as without housing) – Dimensions in mm



PURE (without housing) – Dimensions in mm

Ordering data

Type	Article number	Colour temperature	Housing	Connection cable	Packaging	Weight per pc.
STARK-SLE-G3-19-2000-830-CLA	89601800	3,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-19-2000-840-CLA	89601801	4,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-19-3000-830-CLA	89601810	3,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-19-3000-840-CLA	89601811	4,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-23-3000-830-CLA	89601802	3,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-23-3000-840-CLA	89601803	4,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-23-4000-830-CLA	89601804	3,000 K	yes	no	15 pc(s)	0.009 kg
STARK-SLE-G3-23-4000-840-CLA	89601805	4,000 K	yes	no	15 pc(s)	0.010 kg
STARK-SLE-PURE-G3-19-2000-830-CLA	89601784	3,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-19-2000-840-CLA	89601785	4,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-19-3000-830-CLA	89601806	3,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-19-3000-840-CLA	89601807	4,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-23-3000-830-CLA	89601786	3,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-23-3000-840-CLA	89601787	4,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-23-4000-830-CLA	89601788	3,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-23-4000-840-CLA	89601789	4,000 K	no	yes	20 pc(s)	0.009 kg
STARK-SLE-PURE-G3-19-2000-830-CLA W/O-C	89601794	3,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-19-2000-840-CLA W/O-C	89601795	4,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-19-3000-830-CLA W/O-C	89601808	3,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-19-3000-840-CLA W/O-C	89601809	4,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-23-3000-830-CLA W/O-C	89601796	3,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-23-3000-840-CLA W/O-C	89601797	4,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-23-4000-830-CLA W/O-C	89601798	3,000 K	no	no	20 pc(s)	0.004 kg
STARK-SLE-PURE-G3-23-4000-840-CLA W/O-C	89601799	4,000 K	no	no	20 pc(s)	0.004 kg

Specific technical data

Type [®]	Photo-metric code	Forward current ^① @ ^②	Luminous flux at tp = 25 °C ^②	Luminous flux at tp = 65 °C ^②	Power consumption ^③	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 ^②	Colour rendering index CRI	Energy classification
STARK-SLE-19-2000 – Operating mode HE at 350 mA												
STARK-SLE-G3-19-2000-830-CLA	830/349	350 mA	1,400 lm	1,300 lm	11.9 W	32.9 V	37.2 V	115 lm/W	109 lm/W	98 lm/W	80	A+
STARK-SLE-G3-19-2000-840-CLA	840/349	350 mA	1,600 lm	1,500 lm	11.9 W	32.9 V	37.2 V	131 lm/W	126 lm/W	113 lm/W	80	A+
STARK-SLE-19-2000 – Operating mode BLO												
STARK-SLE-G3-19-2000-830-CLA	830/349	–	2,300 lm	2,000 lm	19.5 W	34.3 V	38.6 V	116 lm/W	103 lm/W	93 lm/W	80	A+
STARK-SLE-G3-19-2000-840-CLA	840/349	–	2,200 lm	2,000 lm	17.6 W	33.9 V	38.2 V	123 lm/W	114 lm/W	103 lm/W	80	A+
STARK-SLE-19-2000 – Operating mode HO at 1,050 mA												
STARK-SLE-G3-19-2000-830-CLA	830/349	1,050 mA	3,700 lm	3,250 lm	40.9 W	37.7 V	42.1 V	89 lm/W	79 lm/W	71 lm/W	80	A
STARK-SLE-G3-19-2000-840-CLA	840/349	1,050 mA	4,100 lm	3,750 lm	40.9 W	37.7 V	42.1 V	98 lm/W	92 lm/W	83 lm/W	80	A+
STARK-SLE-19-3000 – Operating mode HE at 350 mA												
STARK-SLE-G3-19-3000-830-CLA	830/349	350 mA	1,400 lm	1,300 lm	11.7 W	32.2 V	36.5 V	118 lm/W	111 lm/W	100 lm/W	80	A+
STARK-SLE-G3-19-3000-840-CLA	840/349	350 mA	1,600 lm	1,450 lm	11.7 W	32.2 V	36.5 V	134 lm/W	124 lm/W	112 lm/W	80	A+
STARK-SLE-19-3000 – Operating mode BLO												
STARK-SLE-G3-19-3000-830-CLA	830/349	–	3,350 lm	3,000 lm	32.5 W	34.9 V	39.2 V	101 lm/W	92 lm/W	83 lm/W	80	A+
STARK-SLE-G3-19-3000-840-CLA	840/349	–	3,350 lm	3,000 lm	28.5 W	34.4 V	38.7 V	115 lm/W	105 lm/W	95 lm/W	80	A+
STARK-SLE-19-3000 – Operating mode HO at 1,400 mA												
STARK-SLE-G3-19-3000-830-CLA	830/349	1,400 mA	4,750 lm	4,300 lm	54.0 W	37.4 V	41.8 V	86 lm/W	80 lm/W	72 lm/W	80	A
STARK-SLE-G3-19-3000-840-CLA	840/349	1,400 mA	5,300 lm	4,800 lm	54.0 W	37.4 V	41.8 V	96 lm/W	89 lm/W	80 lm/W	80	A+
STARK-SLE-23-3000 – Operating mode HE at 500 mA												
STARK-SLE-G3-23-3000-830-CLA	830/349	500 mA	2,050 lm	1,900 lm	16.9 W	32.6 V	36.9 V	118 lm/W	112 lm/W	101 lm/W	80	A+
STARK-SLE-G3-23-3000-840-CLA	840/349	500 mA	2,300 lm	2,100 lm	16.9 W	32.6 V	36.9 V	133 lm/W	124 lm/W	112 lm/W	80	A+
STARK-SLE-23-3000 – Operating mode BLO												
STARK-SLE-G3-23-3000-830-CLA	830/349	–	3,300 lm	3,000 lm	30.0 W	34.1 V	38.5 V	107 lm/W	100 lm/W	90 lm/W	80	A+
STARK-SLE-G3-23-3000-840-CLA	840/349	–	3,300 lm	3,000 lm	26.2 W	33.7 V	38.0 V	124 lm/W	115 lm/W	104 lm/W	80	A+
STARK-SLE-23-3000 – Operating mode HO at 1,400 mA												
STARK-SLE-G3-23-3000-830-CLA	830/349	1,400 mA	4,900 lm	4,450 lm	52.8 W	36.5 V	40.9 V	91 lm/W	84 lm/W	76 lm/W	80	A
STARK-SLE-G3-23-3000-840-CLA	840/349	1,400 mA	5,600 lm	5,100 lm	52.8 W	36.5 V	40.9 V	104 lm/W	97 lm/W	87 lm/W	80	A+
STARK-SLE-23-4000 – Operating mode HE at 700 mA												
STARK-SLE-G3-23-4000-830-CLA	830/349	700 mA	2,850 lm	2,600 lm	23.8 W	32.9 V	37.2 V	117 lm/W	109 lm/W	98 lm/W	80	A+
STARK-SLE-G3-23-4000-840-CLA	840/349	700 mA	3,150 lm	2,900 lm	23.8 W	32.9 V	37.2 V	130 lm/W	122 lm/W	110 lm/W	80	A+
STARK-SLE-23-4000 – Operating mode BLO												
STARK-SLE-G3-23-4000-830-CLA	830/349	–	4,400 lm	4,000 lm	41.0 W	34.4 V	38.8 V	105 lm/W	98 lm/W	88 lm/W	80	A+
STARK-SLE-G3-23-4000-840-CLA	840/349	–	4,350 lm	4,000 lm	35.0 W	33.9 V	38.2 V	122 lm/W	114 lm/W	103 lm/W	80	A+
STARK-SLE-23-4000 – Operating mode HO at 1,750 mA												
STARK-SLE-G3-23-4000-830-CLA	830/349	1,750 mA	6,250 lm	5,650 lm	66.0 W	36.5 V	40.9 V	93 lm/W	86 lm/W	77 lm/W	80	A
STARK-SLE-G3-23-4000-840-CLA	840/349	1,750 mA	6,900 lm	6,300 lm	66.0 W	36.5 V	40.9 V	103 lm/W	95 lm/W	86 lm/W	80	A+

^① 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.

^② Tolerance range for optical data: ±10 %.

^③ Exceeding the max. operating current leads to an overload on the TALEX module. This may in turn result in a significant reduction in life-time or even destruction of the TALEX module.

^④ Max. permissible surge current: 3 A, duration max. 10 µs.

^⑤ Max. permissible repetitive peak current for STARK-SLE-G3-19-2000: 1,200 mA. Max. permissible repetitive peak current for STARK-SLE-G3-19-3000: 1,680 mA. Max. permissible repetitive peak current for STARK-SLE-G3-23-3000: 1,920 mA. Max. permissible repetitive peak current for STARK-SLE-G3-23-4000: 2,400 mA.

^⑥ HE ... high efficiency, BLO ... best LED operation (see page 4), HO ... high output.

^⑦ Assumed efficiency for the LED control gear is 0.9.

^⑧ All values at tp = 65 °C.

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.

Photometric code

Key for photometric code, e. g. 830 / 349

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	McAdams initial	McAdams after 25% of the life-time (max.6000h)	Luminous flux after 25% of the life-time (max.6000h)	
7	67 – 76				Code	Luminous flux
8	77 – 86				7	≥ 70 %
9	87 – ≥90				8	≥ 80 %
				9	≥ 90 %	

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 TALEXmodule STARK SLE G3 will be greatly reduced or the TALEXmodule STARK SLE G3 may be destroyed.

Therefore the TALEXmodule STARK SLE G3 needs to be mounted onto a heat sink heat sink which does not exceed the value for $R_{th,max}$.

Tridonic's excellent thermal design for the TALEXmodule STARK SLE G3 products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

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.

The operating temperature of a TALEX product is crucial for the light output, the product life-time but also for the product safety.

The thermal limits can be checked at the tp/tc point and at tr.

On page 10 the lumen maintenance is shown in relation to the temperature at tp. tp,rated shows the temperature at which the rated values are reached.

tc shows the thermal limit for safety reason and must never be exceeded under normal conditions.

For the interchangeability with other Zhaga products, $t_{r,max}$ is specified directly at the thermal interface to the heatsink of the luminaire.

For TALEXmodule STARK SLE 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.

**Mounting instruction**

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



None of the components of the TALEXmodule STARK SLE G3 (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5Nm.

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 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.

**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/esd-protection>

Electrical supply/choice of LED control gear

TALEXmodule STARK SLE 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 control gear which complies with the relevant standards. The use of TALEX LED control gears from Tridonic in combination with TALEXmodule STARK SLE G3 guarantees the necessary protection for safe and reliable operation.



TALEXmodule STARK SLE G3 are basic isolated up to 110 V against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the led control gear (also against earth) is above 110 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.

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

- Short-circuit protection
- Overload protection
- Overtemperature protection



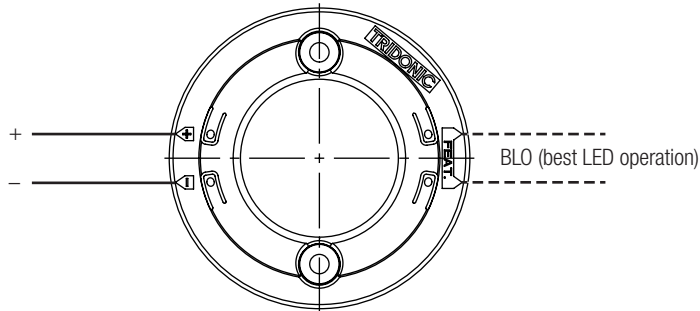
TALEXmodule STARK SLE G3 must be supplied by a constant current LED control gear.

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

Wrong polarity can damage the TALEXmodule STARK SLE G3.

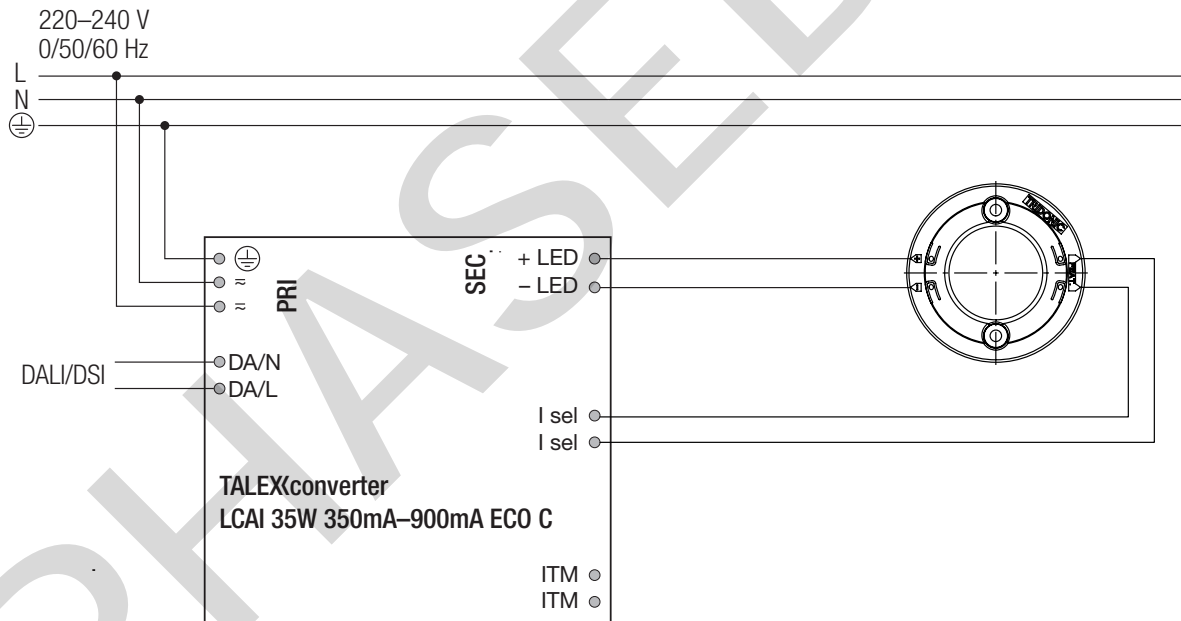
BLO function (Best LED Operation)

The BLO function is available for Tridonic LED control gear of 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 control gear 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 control gear is not necessary anymore.



! TALEXmodule STARK SLE G3 has no temperature monitoring (NTC). The temperature monitoring is available with Tridonic LED control gear series TOP (up to 35 W) and ECO with the ITM feature in combination with the thermal sensor KTY82/210.

Wiring diagram: Example with TALEXconverter 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 control gear	Non-dimmable LED control gear
LES19-2000-830-CLA	550 mA	19.5 W	34.3 V	38.6 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
LES19-2000-840-CLA	500 mA	17.6 W	33.9 V	38.2 V	LCAI 20W 350-900mA ECO LCAI 35W 350-900mA ECO	LCI 20W 350-900mA TOP LCI 35W 350-900mA TOP
LES19-3000-830-CLA	900 mA	32.5 W	34.9 V	39.2 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
LES19-3000-840-CLA	800 mA	28.5 W	34.4 V	38.7 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
LES23-3000-830-CLA	850 mA	30.0 W	34.1 V	38.5 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
LES23-3000-840-CLA	750 mA	26.2 W	33.7 V	38.0 V	LCAI 35W 350-900mA ECO	LCI 35W 350-900mA TOP
LES23-4000-830-CLA	1,150 mA	41.0 W	34.4 V	38.8 V	LCAI 55W 900-1750mA ECO	LCI 55W 900-1750mA TOP
LES23-4000-840-CLA	1,000 mA	35.0 W	33.9 V	38.2 V	LCAI 55W 900-1750mA ECO	LCI 55W 900-1750mA TOP

Heat sink values

TALEXmodule STARK-SLE-G3-19-2000 CLASSIC

ta	tp	Operation mode	Colour temperature	R _{th, hs-a}
25 °C	65 °C	HE	3,000 / 4,000 K	5.07 K/W
30 °C	65 °C	HE	3,000 / 4,000 K	4.43 K/W
40 °C	65 °C	HE	3,000 / 4,000 K	3.15 K/W
50 °C	65 °C	HE	3,000 / 4,000 K	1.87 K/W
25 °C	65 °C	BLO	3,000 K	2.93 K/W
30 °C	65 °C	BLO	3,000 K	2.56 K/W
40 °C	65 °C	BLO	3,000 K	1.81 K/W
50 °C	65 °C	BLO	3,000 K	1.07 K/W
25 °C	65 °C	BLO	4,000 K	3.53 K/W
30 °C	65 °C	BLO	4,000 K	3.08 K/W
40 °C	65 °C	BLO	4,000 K	2.18 K/W
50 °C	65 °C	BLO	4,000 K	1.29 K/W
25 °C	65 °C	HO	3,000 / 4,000 K	1.25 K/W
30 °C	65 °C	HO	3,000 / 4,000 K	1.09 K/W
40 °C	65 °C	HO	3,000 / 4,000 K	0.76 K/W
50 °C	65 °C	HO	3,000 / 4,000 K	0.44 K/W

TALEXmodule STARK-SLE-G3-19-3000 CLASSIC

ta	tp	Operation mode	Colour temperature	R _{th, hs-a}
25 °C	65 °C	HE	3,000 / 4,000 K	5.22 K/W
30 °C	65 °C	HE	3,000 / 4,000 K	4.56 K/W
40 °C	65 °C	HE	3,000 / 4,000 K	3.24 K/W
50 °C	65 °C	HE	3,000 / 4,000 K	1.93 K/W
25 °C	65 °C	BLO	3,000 K	1.69 K/W
30 °C	65 °C	BLO	3,000 K	1.48 K/W
40 °C	65 °C	BLO	3,000 K	1.04 K/W
50 °C	65 °C	BLO	3,000 K	0.60 K/W
25 °C	65 °C	BLO	4,000 K	2.07 K/W
30 °C	65 °C	BLO	4,000 K	1.80 K/W
40 °C	65 °C	BLO	4,000 K	1.27 K/W
50 °C	65 °C	BLO	4,000 K	0.74 K/W
25 °C	65 °C	HO	3,000 / 4,000 K	0.94 K/W
30 °C	65 °C	HO	3,000 / 4,000 K	0.81 K/W
40 °C	65 °C	HO	3,000 / 4,000 K	0.57 K/W
50 °C	65 °C	HO	3,000 / 4,000 K	0.32 K/W

TALEXmodule STARK-SLE-G3-23-3000 CLASSIC

ta	tp	Operation mode	Colour temperature	R _{th, hs-a}
25 °C	65 °C	HE	3,000 / 4,000 K	3.59 K/W
30 °C	65 °C	HE	3,000 / 4,000 K	3.14 K/W
40 °C	65 °C	HE	3,000 / 4,000 K	2.22 K/W
50 °C	65 °C	HE	3,000 / 4,000 K	1.31 K/W
25 °C	65 °C	BLO	3,000 K	1.90 K/W
30 °C	65 °C	BLO	3,000 K	1.65 K/W
40 °C	65 °C	BLO	3,000 K	1.17 K/W
50 °C	65 °C	BLO	3,000 K	0.68 K/W
25 °C	65 °C	BLO	4,000 K	2.33 K/W
30 °C	65 °C	BLO	4,000 K	2.04 K/W
40 °C	65 °C	BLO	4,000 K	1.44 K/W
50 °C	65 °C	BLO	4,000 K	0.84 K/W
25 °C	65 °C	HO	3,000 / 4,000 K	0.98 K/W
30 °C	65 °C	HO	3,000 / 4,000 K	0.85 K/W
40 °C	65 °C	HO	3,000 / 4,000 K	0.59 K/W
50 °C	65 °C	HO	3,000 / 4,000 K	0.34 K/W

TALEXmodule STARK-SLE-G3-23-4000 CLASSIC

ta	tp	Operation mode	Colour temperature	R _{th, hs-a}
25 °C	65 °C	HE	3,000 / 4,000 K	2.52 K/W
30 °C	65 °C	HE	3,000 / 4,000 K	2.20 K/W
40 °C	65 °C	HE	3,000 / 4,000 K	1.55 K/W
50 °C	65 °C	HE	3,000 / 4,000 K	0.91 K/W
25 °C	65 °C	BLO	3,000 K	1.37 K/W
30 °C	65 °C	BLO	3,000 K	1.19 K/W
40 °C	65 °C	BLO	3,000 K	0.84 K/W
50 °C	65 °C	BLO	3,000 K	0.48 K/W
25 °C	65 °C	BLO	4,000 K	1.72 K/W
30 °C	65 °C	BLO	4,000 K	1.50 K/W
40 °C	65 °C	BLO	4,000 K	1.06 K/W
50 °C	65 °C	BLO	4,000 K	0.61 K/W
25 °C	65 °C	HO	3,000 / 4,000 K	0.78 K/W
30 °C	65 °C	HO	3,000 / 4,000 K	0.67 K/W
40 °C	65 °C	HO	3,000 / 4,000 K	0.47 K/W
50 °C	65 °C	HO	3,000 / 4,000 K	0.26 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 TALEXmodule STARK SLE G3 and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.

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

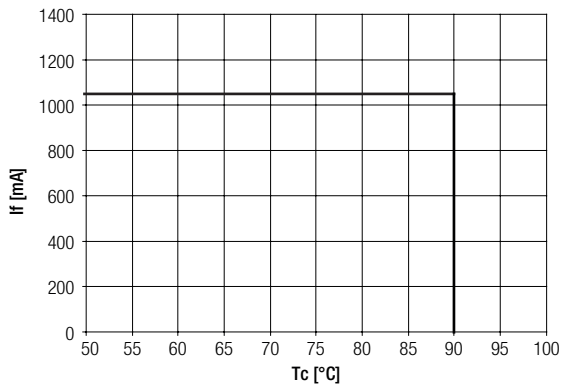
Use of thermal interface material with thermal conductivity of $\lambda > 1$ W/mK and layer thickness of interface material with max. 50 µm or a similar interface material where the quotient of layer thickness and thermal conductivity $b < 50$ µmmK/W.

Thermal behaviour

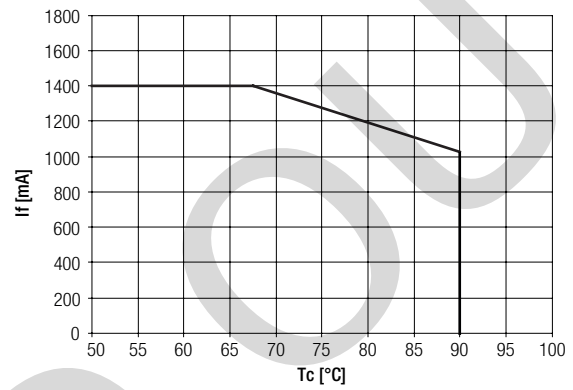
storage temperature	-30...+80 °C
operating temperature t_a	-25...+50 °C
t_p (at typ. current)	65 °C
t_c max. (at typ. current)	acc. to the derating curves
max. humidity*	0...80 %

* not condensed

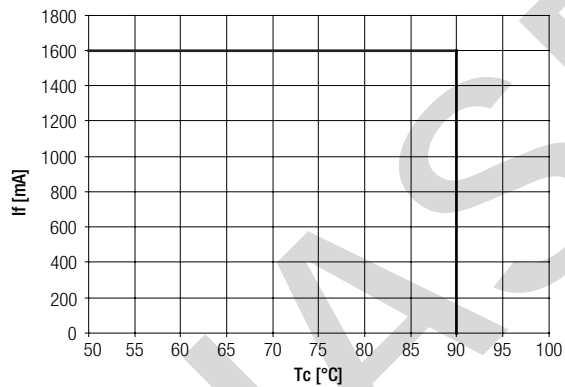
Derating curve for TALEX(module STARK SLE G3 19-2000 CLASSIC



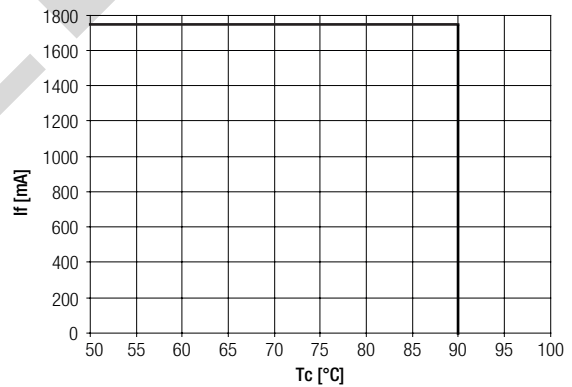
Derating curve for TALEX(module STARK SLE G3 19-3000 CLASSIC



Derating curve for TALEX(module STARK SLE G3 23-3000 CLASSIC



Derating curve for TALEX(module STARK SLE G3 23-4000 CLASSIC



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.

Lumen maintenance for TALEX(module STARK SLE G3 19-2000 CLASSIC

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
BLO	65 °C	44,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	33,000 h	49,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	25,000 h	37,000 h	53,000 h	60,000 h	60,000 h	60,000 h
HO	65 °C	24,000 h	36,000 h	51,000 h	60,000 h	60,000 h	60,000 h
	75 °C	18,000 h	27,000 h	38,000 h	57,000 h	60,000 h	60,000 h
	85 °C	14,000 h	20,000 h	29,000 h	43,000 h	46,000 h	60,000 h

Lumen maintenance for TALEX(module STARK SLE G3 19-3000 CLASSIC

Operating mode	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
HE	65 °C	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	44,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	33,000 h	50,000 h	60,000 h	60,000 h	60,000 h	60,000 h
BLO	65 °C	42,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	31,000 h	47,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	24,000 h	36,000 h	50,000 h	60,000 h	60,000 h	60,000 h
HO	65 °C	26,000 h	40,000 h	56,000 h	60,000 h	60,000 h	60,000 h
	75 °C	20,000 h	30,000 h	42,000 h	60,000 h	60,000 h	60,000 h
	85 °C	15,000 h	22,000 h	32,000 h	47,000 h	50,000 h	60,000 h

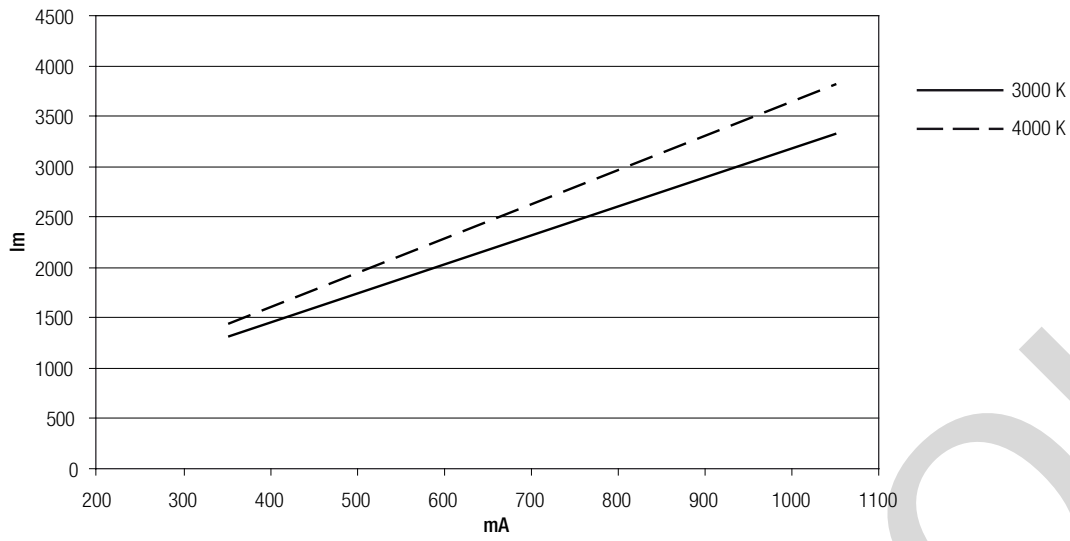
Lumen maintenance for TALEX(module STARK SLE G3 23-3000 CLASSIC

Operating mode	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
HE	65 °C	57,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	42,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	32,000 h	48,000 h	60,000 h	60,000 h	60,000 h	60,000 h
BLO	65 °C	46,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	34,000 h	51,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	26,000 h	39,000 h	55,000 h	60,000 h	60,000 h	60,000 h
HO	65 °C	32,000 h	48,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	24,000 h	36,000 h	50,000 h	60,000 h	60,000 h	60,000 h
	85 °C	18,000 h	27,000 h	38,000 h	57,000 h	60,000 h	60,000 h

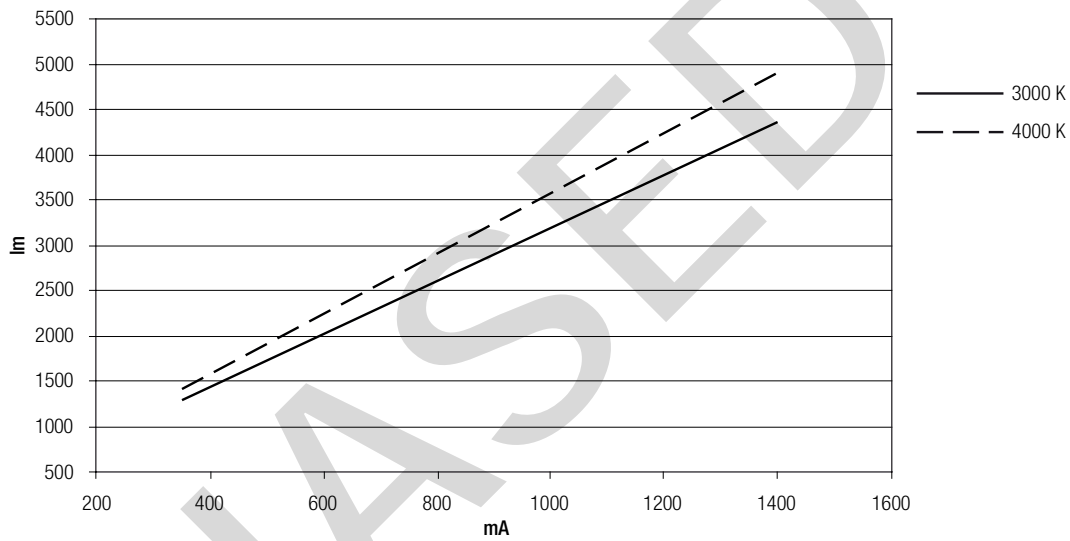
Lumen maintenance for TALEX(module STARK SLE G3 23-4000 CLASSIC

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
BLO	65 °C	45,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	34,000 h	50,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	25,000 h	38,000 h	54,000 h	60,000 h	60,000 h	60,000 h
HO	65 °C	32,000 h	48,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	24,000 h	36,000 h	50,000 h	60,000 h	60,000 h	60,000 h
	85 °C	18,000 h	27,000 h	38,000 h	57,000 h	60,000 h	60,000 h

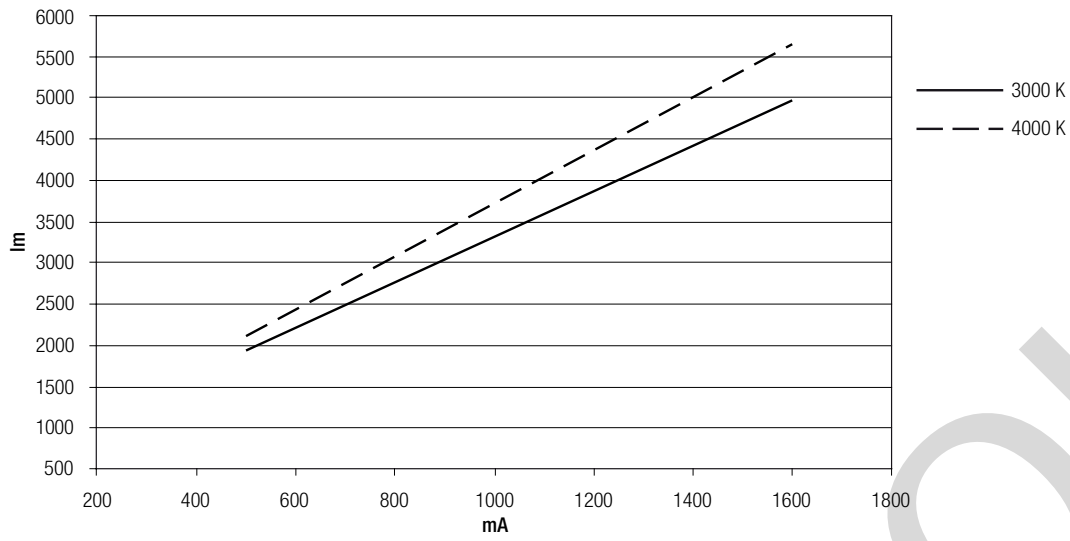
Luminous flux and operating current for TALEX(module STARK SLE G3 19-2000 CLASSIC at $t_p = 65^\circ\text{C}$



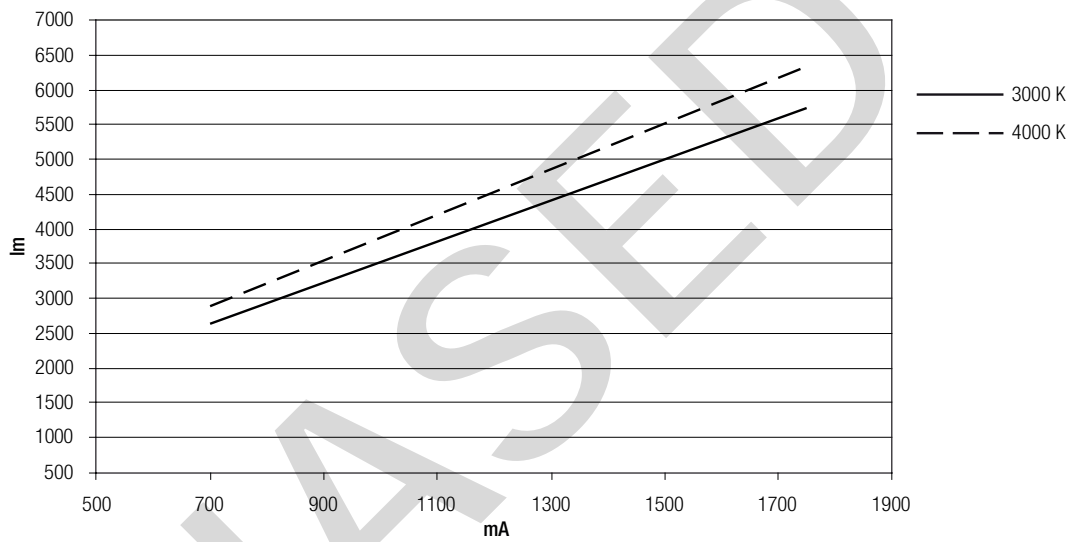
Luminous flux and operating current for TALEX(module STARK SLE G3 19-3000 CLASSIC at $t_p = 65^\circ\text{C}$



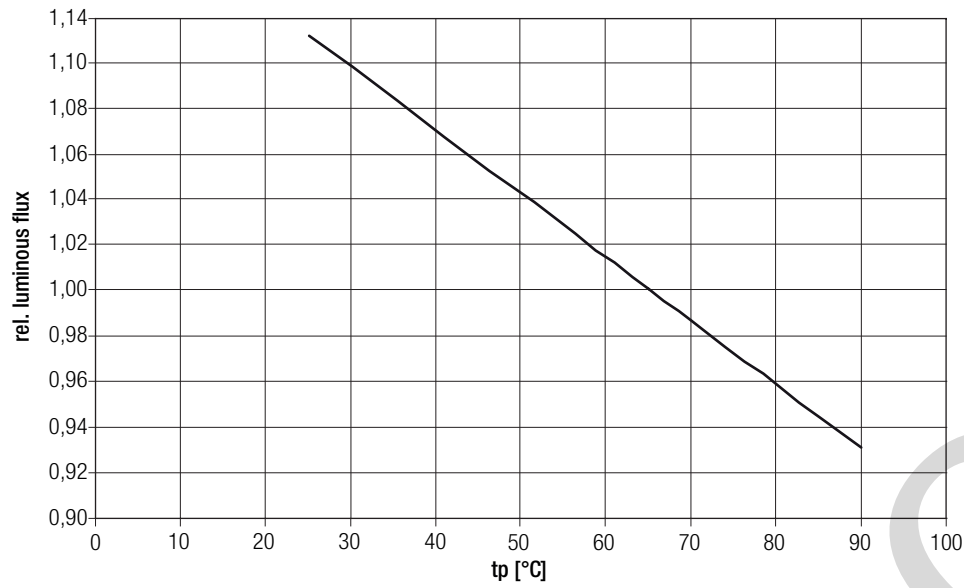
Luminous flux and operating current for TALEX(module STARK SLE G3 23-3000 CLASSIC at $t_p = 65\text{ }^\circ\text{C}$



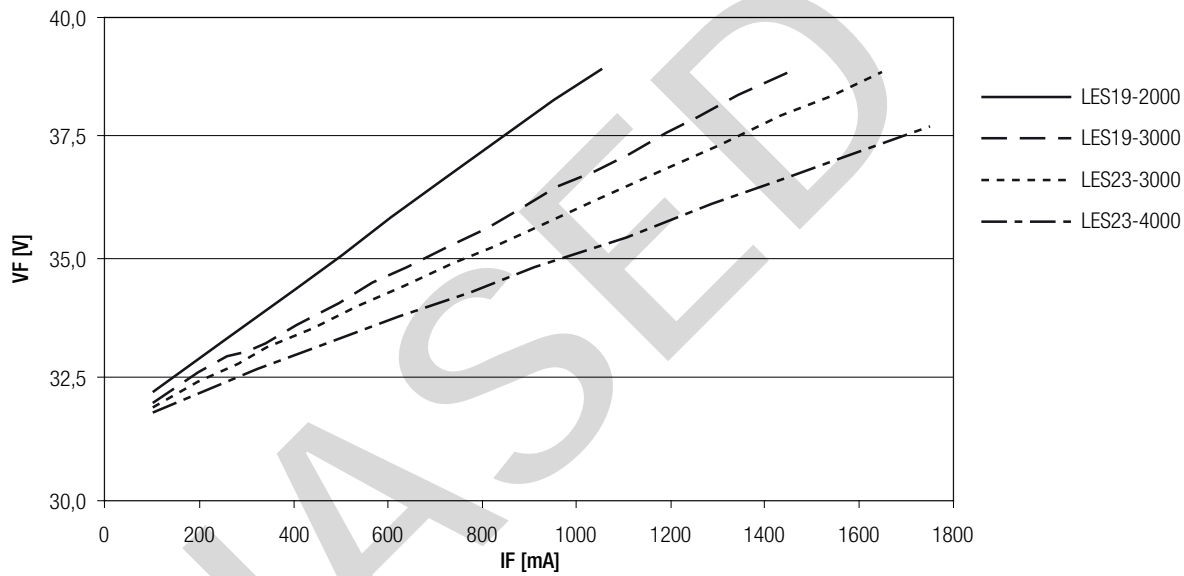
Luminous flux and operating current for TALEX(module STARK SLE G3 23-4000 CLASSIC at $t_p = 65\text{ }^\circ\text{C}$



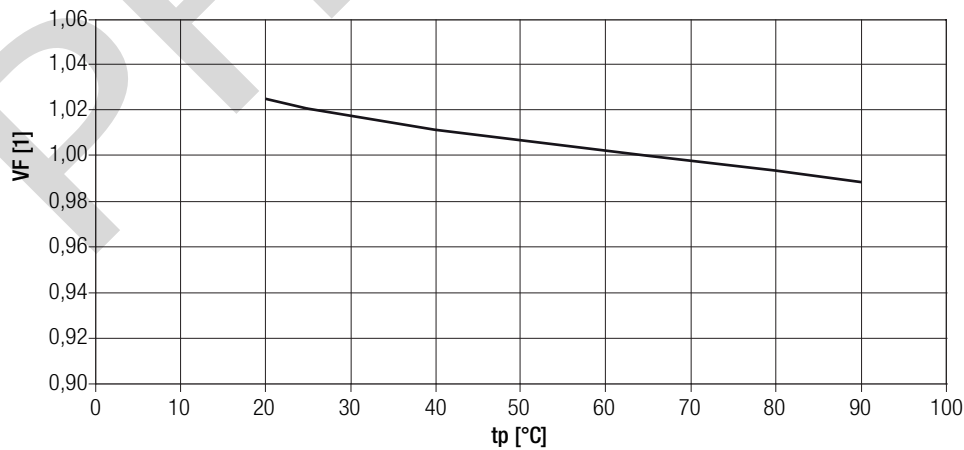
Relative luminous flux



Forward current vs. forward voltage

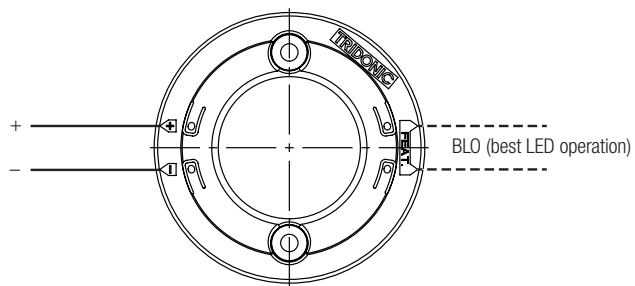


tp temperature vs. forward voltage

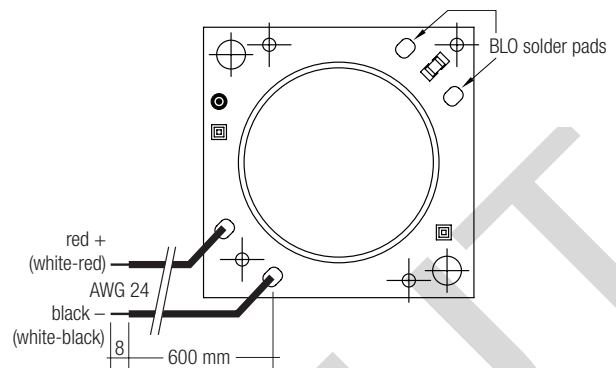


The diagrams based on statistic values.
The real values can be different.

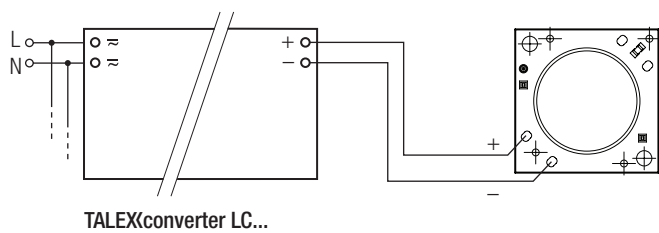
Wiring with housing



Wiring without housing



Wiring example

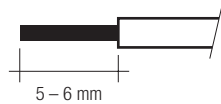


Wiring type and cross section

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 (5 – 6 mm).

Removing wires by lightly pressing on the push button.

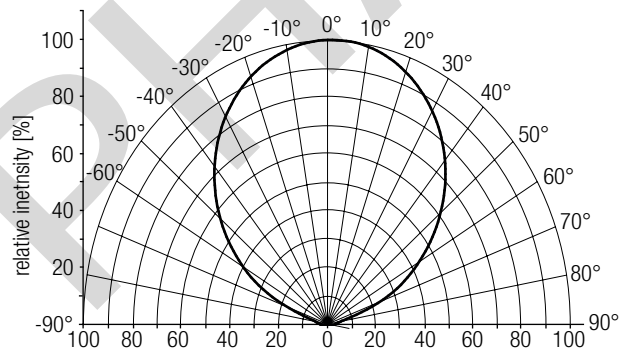
wire preparation:



Optical characteristics TALEX(module STARK SLE G3)

The optical design of the TALEX(module STARK SLE G3 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 or on request.

Coordinates and tolerances according to CIE 1931

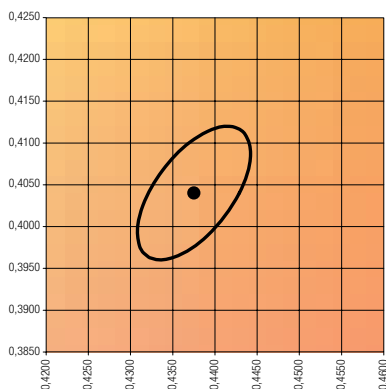
The specified colour coordinates are measured integral after a settling time of 200 ms. The current impuls depends on the module type.

Module type	Current impulse
TALEXmodule STARK-SLE-G3-19-2000 CLASSIC	700 mA
TALEXmodule STARK-SLE-G3-19-3000 CLASSIC	1,050 mA
TALEXmodule STARK-SLE-G3-23-3000 CLASSIC	1,050 mA
TALEXmodule STARK-SLE-G3-23-4000 CLASSIC	1,400 mA

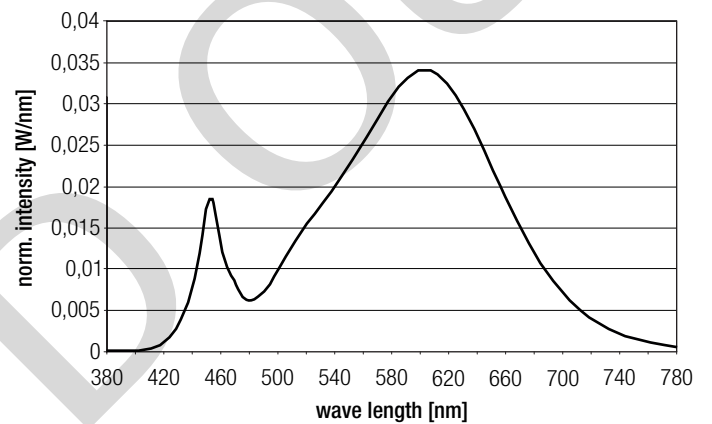
The ambient temperature of the measurement is $t_a = 25\text{ }^\circ\text{C}$.
The measurement tolerance of the colour coordinates are ± 0.01 .

3,000 K

	x0	y0
Centre	0.4369	0.4041

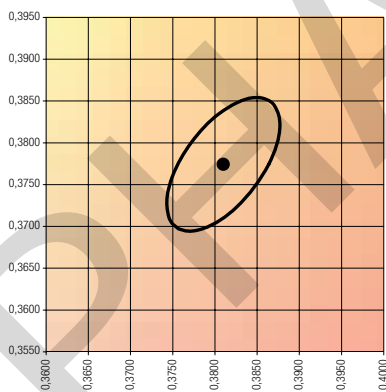


MacAdam ellipse: 3SDCM

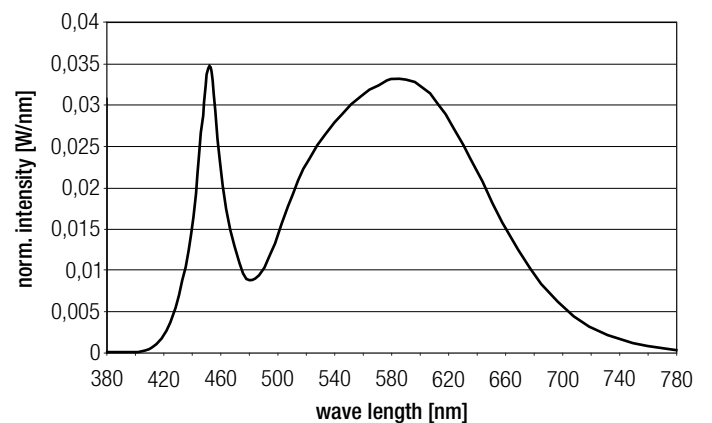


4,000 K

	x0	y0
Centre	0.3804	0.3767



MacAdam ellipse: 3SDCM



ZHAGA relevant technical data

Specific technical data

Type	Photo-metric code	Forward current ^① ③	Luminous flux at tp = 25 °C ^②	Luminous flux at tp = 65 °C ^②	Power consumption module ^④	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	Colour rendering index CRI	Energy classification
STARK-SLE-G3-19-2000-840-CLA	840/349	700 mA	2,950 lm	2,700 lm	25.6 W	35.3 V	39.6 V	113 lm/W	105 lm/W	95 lm/W	80	A+
STARK-SLE-G3-19-3000-840-CLA	840/349	700 mA	2,990 lm	2,740 lm	24.6 W	33.9 V	38.2 V	119 lm/W	111 lm/W	100 lm/W	80	A+
STARK-SLE-G3-23-3000-840-CLA	840/349	1,050 mA	4,430 lm	4,030 lm	38.0 W	35.0 V	39.3 V	114 lm/W	106 lm/W	95 lm/W	80	A+
STARK-SLE-G3-23-4000-840-CLA	840/349	1,050 mA	4,530 lm	4,160 lm	37.0 W	34.1 V	38.4 V	120 lm/W	112 lm/W	101 lm/W	80	A+

① 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 or temperature-sensitive sticker as per EN 60598-1. For the precise position of the tp point see the drawing above.

② Tolerance range for optical data: ±10 %.

③ Exceeding the max. operating current leads to an overload on the TALEX module. This may in turn result in a significant reduction in life-time or even destruction of the TALEX module.

④ Max. permissible surge current: 3 A, duration max. 10 µs.

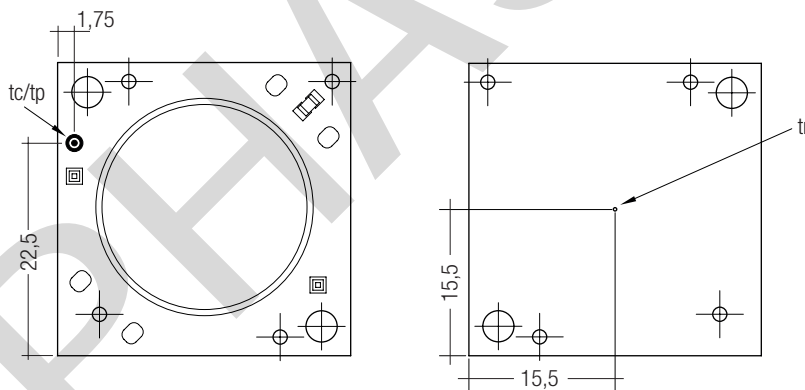
⑤ Max. permissible repetitive peak current for STARK-SLE-G3-19-2000 is 1,200 mA. Max. permissible repetitive peak current for STARK-SLE-G3-19-3000 is 1,680 mA. Max. permissible repetitive peak current for STARK-SLE-G3-23-3000 is 1,920 mA. Max. permissible repetitive peak current for STARK-SLE-G3-23-4000 is 2,400 mA.

⑥ All values at tp = 65 °C.

Heat sink values, thermal power values and thermal resistance values

Type	Forward current	Luminous flux category	P _{th, rear, max}	t _{r, max} at tp = 65 °C	R _{th, rear, max} at ta = 25 °C
STARK-SLE-G3-19-2000-840-CLA	700 mA	C25	18.7 W	63.10 °C	1.95 K/W
STARK-SLE-G3-19-3000-840-CLA	700 mA	C25	17.6 W	61.41 °C	1.97 K/W
STARK-SLE-G3-23-3000-840-CLA	1,050 mA	C40	27.3 W	65.16 °C	1.38 K/W
STARK-SLE-G3-23-4000-840-CLA	1,050 mA	C40	24.9 W	67.85 °C	1.64 K/W

Thermal points tc/tp and tr



Notes

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

Additionally the TALEX module STARK SLE 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 $b < 50 \text{ µmmK/W}$.

Dimensions

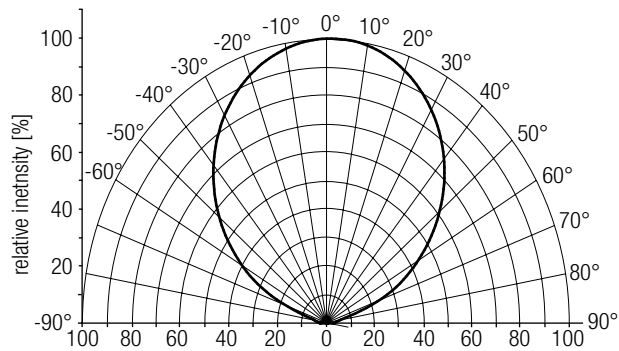
	STARK SLE G3 LES19	STARK SLE G3 LES23
Casing dimensions	50 ± 0.15 mm	50 ± 0.15 mm
LES diameter	18 ± 0.80 mm	22 ± 0.80 mm
OCA classification	OCA B	OCA C

ZHAGA relevant technical data

Optical characteristics TALEX(module STARK SLE G3

The optical design of the TALEX(module STARK SLE G3 product line ensures optimum homogeneity for the light distribution.

Light distribution



Rational symmetry of luminous intensity

Polar angle	C slices	max. deviation from average curve
- 60° to + 60°	all	± 6.72 %
- 75° to - 62,5° and + 62,5° to + 75°	0° to + 45° and + 135° to + 165°	± 24.7 %
- 75° to - 62,5° and + 62,5° to + 75°	+ 60° to + 120°	NA

Partial luminous flux for flux zones

CIE cumulative flux zone	γ - angle	Minimum of relative partial flux	Maximum of relative partial flux
FC1	0° - 41.4°	47 %	50 %
FC2 - FC1	41.4° - 60°	32 %	33 %
FC3 - FC2	60° - 75.5°	15 %	17 %
FC4 - FC3	75.5° - 90°	2 %	3 %