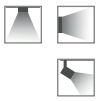
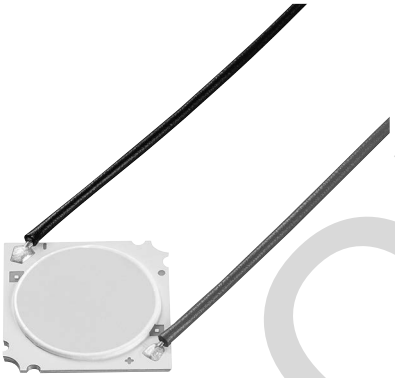


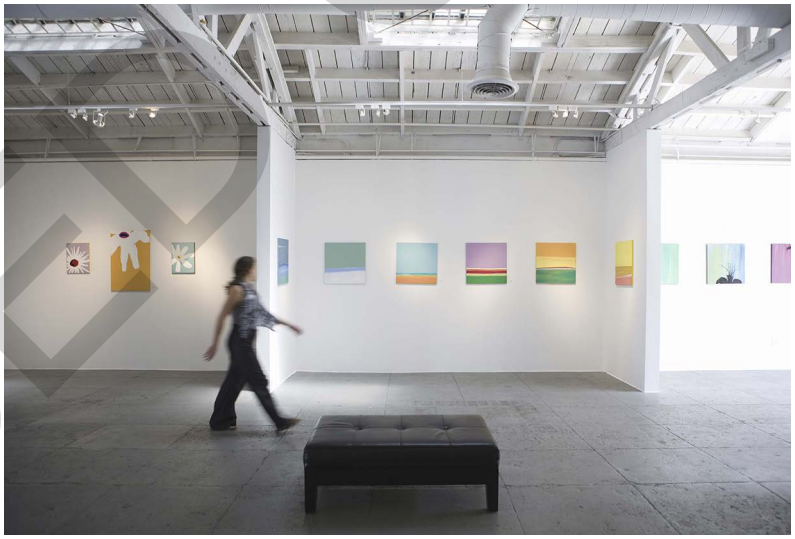
TALEXmodule STARK SLE GEN3 ART Mini
TALEXmodule SLE EXCITE

Product description

- Highest light quality in the market with full spectrum technology
- Application: Shop, Art & Culture
- Luminous flux up to 790 lm at tp = 65 °C
- Special Colour spectrum for High End Applications with CRI 98 (compareable to incandescent lamp)
- For spotlights and downlights
- High colour consistency (MacAdam 2)
- Small LES (light emitting surface) diameter enables small beam angle for spotlights
- Excellent thermal management by COB technology
- Uniform radiation with Dam&Fill technology
- Integrated LED module
- Cooling required
- Flexible operating modes
- 5-year guarantee

Standards, page 3
Colour temperatures and tolerances, page 7





RoHS

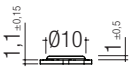
TALEXmodule STARK SLE GEN3 ART Mini

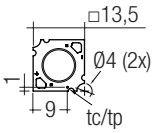
TALEXmodule SLE EXCITE

Technical data

Beam characteristic	115°
Ambient temperature range	-25 ... +50 °C
tp rated[1]	65 °C
tc[1]	up to 90 °C
Max. DC forward current[2]	700 mA
Max. permissible LF current ripple	960 mA
Max. permissible peak current	3,000 mA / max. 10 µs
Max. permissible output voltage of LED Driver[3]	50 V
Insulation test voltage	0.5 kV
ESD classification	severity level 4
Risk group (EN 62471:2008)	1
Type of protection	IP00

LES 10





Without housing – Dimensions in mm

Ordering data

Type	Article number	Colour temperature	Connection cable	Packaging	Weight per pc.
STARK-SLE-PURE-G3-10-930-ART	89601762	3,000 K	yes	20 pc(s).	0.005 kg
STARK-SLE-PURE-G3-10-930-ART W/O-C	89601761	3,000 K	no	20 pc(s).	0.002 kg

Specific technical data

Type[6]	Photometric code	Forward current	Luminous flux at tp = 25 °C[4]	Luminous flux at tp = 65 °C[4]	Power consumption[4] [5]	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Colour rendering index CRI
STARK-SLE-10 – Operating mode HE at 350 mA								
STARK-SLE-G3-PURE-10-930-ART	930/239	350 mA	480 lm	450 lm	6.1 W	16.7 V	18.9 V	98
STARK-SLE-10 – Operating mode HO at 700 mA								
STARK-SLE-G3-PURE-10-930-ART	930/239	700 mA	880 lm	790 lm	13.2 W	18.3 V	20.4 V	98

[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] All values at tp = 65 °C.

[6] HE ... high efficiency, HO ... high output.

Unique light quality – listing of the Ri values

Ra8	Ra14	Ri01	Ri02	Ri03	Ri04	Ri05	Ri06	Ri07	Ri08	Ri09	Ri10	Ri11	Ri12	Ri13	Ri14	Ri15	Ri16
98	97	97	99	96	96	97	97	100	98	98	99	93	92	97	97	97	96

1. Standards

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

1.1 Glow wire test

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

1.2 Photometric code

Key for photometric code, e. g. 930 / 239

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

1.3 Energy classification

Type	Forward current	Energy classification
SLE-G3-PURE-10-930-ART	350 mA	A+
	700 mA	A

2. Thermical details

2.1 tp point, ambient temperature and life-time

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

For 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.

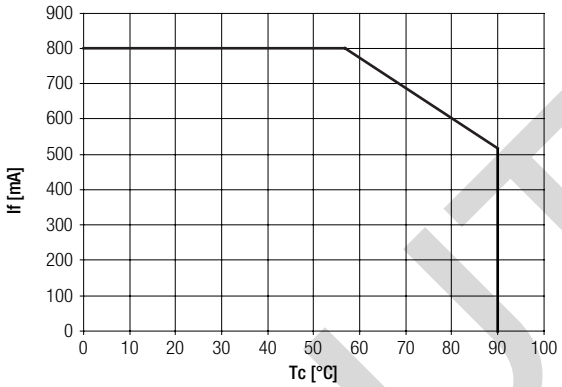
Compliance with the maximum permissible reference temperature at the tp point must be checked under operating conditions in a thermally stable state. The maximum value must be determined under worst-case conditions for the relevant application.

2.2 Storage and humidity

storage temperature	-30 ... +80 °C

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

2.3 Derating curve



2.4 Thermal design and heat sink

The rated life of TALEX products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the TALEXmodule STARK SLE G3 will be greatly reduced or the TALEXmodule STARK SLE G3 may be destroyed.

2.5 Heat sink values

ta	tp	Operation mode	$R_{th.\ hs\text{-}a}$
25 °C	65 °C	HE	9.00 K/W
30 °C	65 °C	HE	7.87 K/W
40 °C	65 °C	HE	5.61 K/W
50 °C	65 °C	HE	3.34 K/W
25 °C	65 °C	HO	3.78 K/W
30 °C	65 °C	HO	3.30 K/W
40 °C	65 °C	HO	2.34 K/W
50 °C	65 °C	HO	1.39 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 $l > 1$ W/mK and layer thickness of interface material with max. 50 µm or a similar interface material where the quotient of layer thickness and thermal conductivity $b < 50$ µmmK/W.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

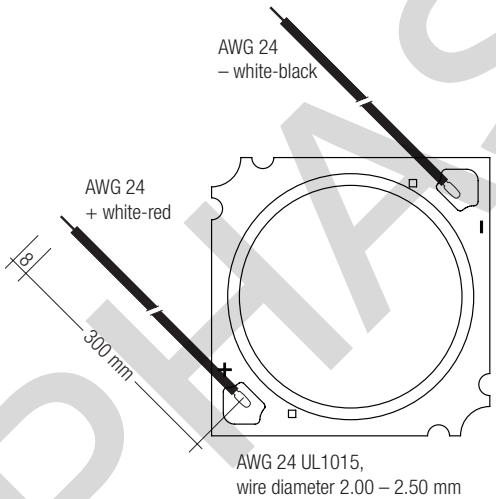
TALEXmodule SLE G3 from Tridonic are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with a LED Driver which complies with the relevant standards. The use of TALEX LED Drivers from Tridonic in combination with TALEXmodule SLE G3 guarantees the necessary protection for safe and reliable operation.

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

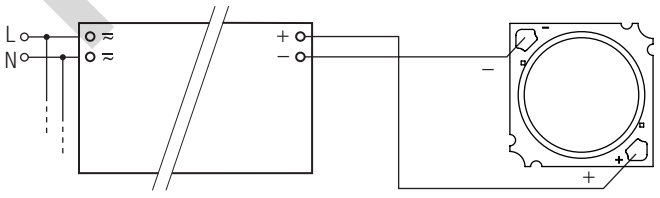
TALEXmodule SLE G3 must be supplied by a constant current LED Driver. Operation with a constant voltage LED Driver will lead to an irreversible damage of the module.
Wrong polarity can damage the TALEXmodule SLE G3.

TALEXmodule STARK SLE G3 are basic isolated against ground up to 50 V 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 50 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.

3.2 Wiring



Wiring example



TALEXconverter LC...

3.3 Mounting instruction

TALEXmodule 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 by removing all dirt, dust and grease before installing the TALEX modules.

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

Max. torque for fixing: 0.5 Nm.

The LED modules are mounted with 2 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used for LED modules without housing.

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

3.4 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. Life-time

4.1 Life-time, lumen maintenance and failure rate

The light output of an LED Module decreases over the life-time, this is characterized with the L value.
L70 means that the LED module will give 70 % of its initial luminous flux. This value is always related to the number of operation hours and therefore defines the life-time of an LED module.

As the L value is a statistical value and the lumen maintenace may vary over the delivered LED modules.
The B value defines the amount of modules which are below the specific L value, e.g. L70B10 means 10 % of the LED modules are below 70 % of the inital luminous flux, respectivly 90 % will be above 70 % of the initial value. In addition the
percentage of failed modules (fatal failure) is characterized by the C value.

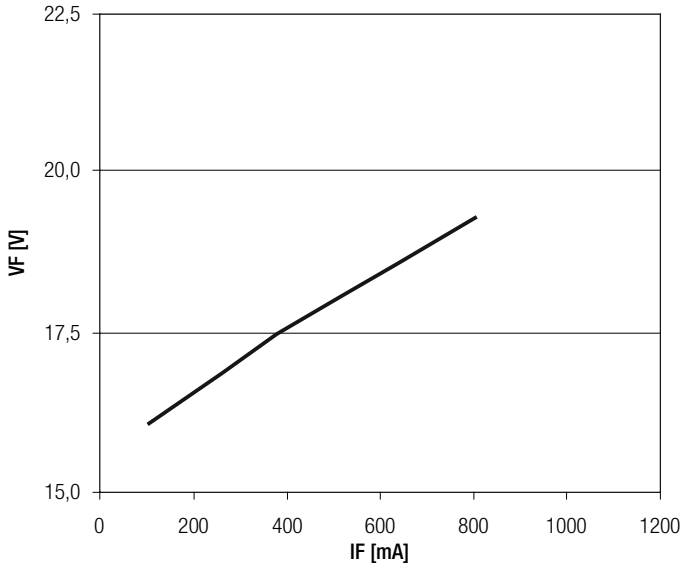
The F value is the combination of the B and C value. That means for F degradation and complete failures are considered, e.g. L70F10 means 10 % of the LED modules may fail or be below 70 % of the initial luminous flux.

4.2 Lumen maintenance

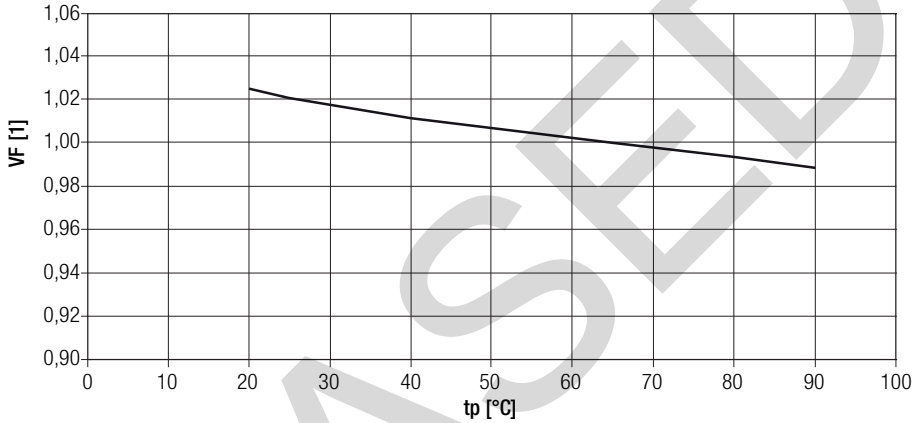
Operating mode	tp temperature	L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
HE	65 °C	51,000 h	60,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	75 °C	38,000 h	57,000 h	60,000 h	60,000 h	60,000 h	60,000 h
	85 °C	29,000 h	43,000 h	60,000 h	60,000 h	60,000 h	60,000 h
HO	65 °C	32,000 h	48,000 h	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

5. Electrical values

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



5.2 Forward voltage vs. tp temperature



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

6. Photometric charcteristics

6.1 Coordinates and tolerances according to CIE 1931

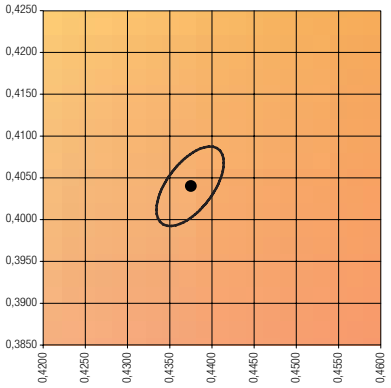
The specified colour coordinates are measured integral after a settling time of 200 ms. The current impuls depends on the module type.

Module type	Current impulse
TALEXmodule STARK-SLE-G3-10-ART	700 mA

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

3,000 K

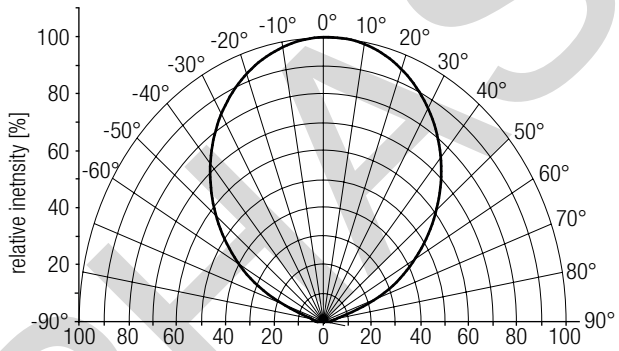
	x0	y0
Centre	0.4369	0.4041



MacAdam ellipse: 2SDCM

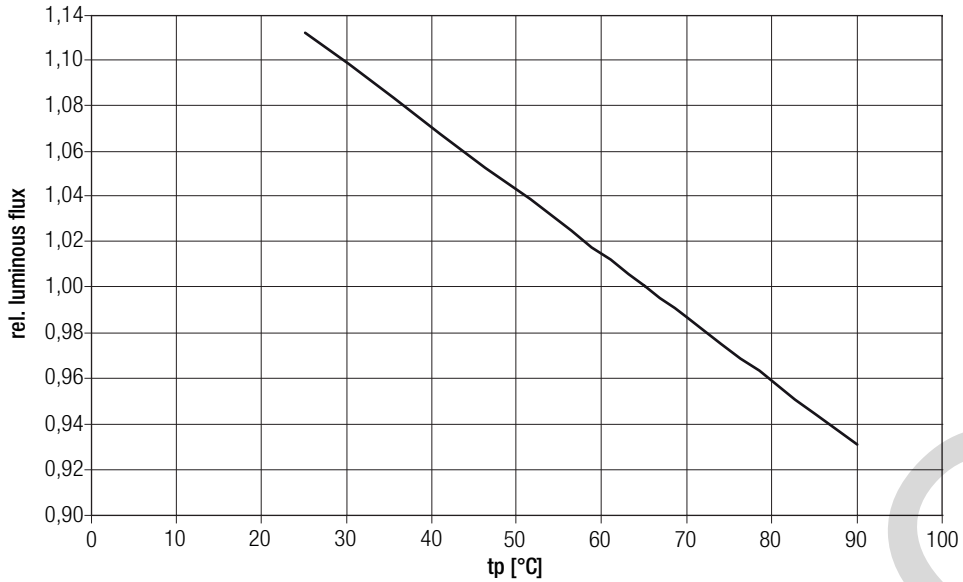
6.2 Light distribution

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



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

6.3 Relative luminous flux vs. tp temperature



6.4 Relative luminous flux vs. operating current