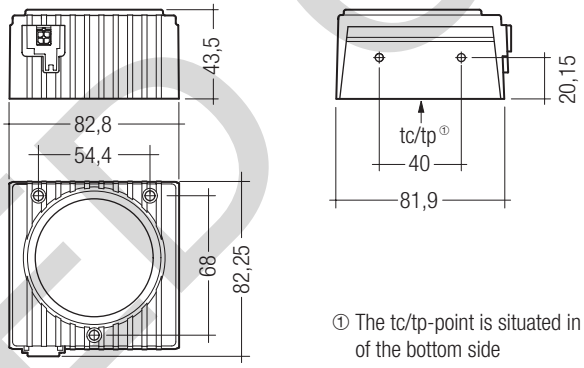
RoHS

TALEXmodule STARK DLE SELECT
STARK DLE

Product description
- Downlights
- High-flux LED module
- Low tolerances for colour temperatures (MacAdams 3)
- Compact design
- Excellent thermal management①
- NTC for temperature control
- High-power LED module in chip-on-board technololgy (COB)
- Uniform distribution of light
- Fixing holes for M4 screws
- Constant colour over the dimming range from 5 to 100 %



① The tc/tp-point is situated in centre of the bottom side

Technical data

Beam characteristic	80°
Ambient temperature ta	-25 ... +55 °C
tp_rated temperature①	65 °C
Max. tc point temperature①	70 °C
Risk group (EN 62471:2008)	1

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Accessories connection cable, page 2

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Colour temperatures and tolerances, page 6

Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
STARK DLE 1100 930 SEL	**89601296**	3.000 K	10 pc(s).	0.26 kg
STARK DLE 2000 930 SEL	**89601291**	3.000 K	10 pc(s).	0.26 kg
STARK DLE 3000 930 SEL	**89601167**	3.000 K	10 pc(s).	0.26 kg
STARK DLE 1100 940 SEL	**89601297**	4.000 K	10 pc(s).	0.26 kg
STARK DLE 2000 940 SEL	**89601292**	4.000 K	10 pc(s).	0.26 kg
STARK DLE 3000 940 SEL	**89601168**	4.000 K	10 pc(s).	0.26 kg

Specific technical data

Type	Typ, luminous flux②	Typ, forward current③④⑤	Typ, forward voltage⑥	Power consumption module	Power consumption system	Efficacy of the module	Efficacy of the system	Colour rendering index CRI	Energy classification
STARK DLE 1100 930 SEL	1,050 lm	1,050 mA	14.1 V	14.8 W	16.7 W	71 lm/W	64 lm/W	90	B
STARK DLE 2000 930 SEL	1,900 lm	1,050 mA	26.1 V	27.4 W	31.0 W	69 lm/W	62 lm/W	90	A
STARK DLE 3000 930 SEL	2,800 lm	1,400 mA	26.1 V	36.5 W	41.2 W	77 lm/W	69 lm/W	90	A
STARK DLE 1100 940 SEL	1,050 lm	1,050 mA	14.1 V	14.8 W	16.7 W	71 lm/W	64 lm/W	90	B
STARK DLE 2000 940 SEL	1,900 lm	1,050 mA	26.1 V	27.4 W	31.0 W	69 lm/W	62 lm/W	90	A
STARK DLE 3000 940 SEL	2,800 lm	1,400 mA	26.1 V	36.5 W	41.2 W	77 lm/W	69 lm/W	90	A

All values at tp = 65 °C.

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 TALEXmodule 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 TALEXmodule. This may in turn result in a significant reduction in lifetime or even destruction of the TALEXmodule.

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

⑤ Tolerance range current: ±5 %.

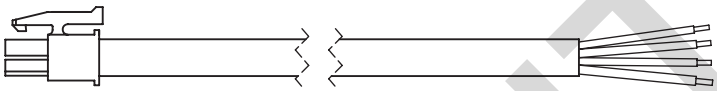
⑥ Tolerance range voltage: ±10 %.

ACCES-SORIES

TALEXXaccessories CONNECT 4PIN PLUG / 4PIN CRIMP

Product description

- Open wire ends for flexible use of the module
- 4-pin plug to 4 open wires
- Halogen free



Ordering data

Type	Article number	Length	Packaging carton	Weight per pcs.
Connection cable 1.0m	24176077	1 m	20 pc(s).	0.094 kg
Connection cable 2.0m	24176078	2 m	20 pc(s).	0.047 kg

LED control gear matrix – TALEXXmodule STARK DLE SELECT

		REMOTE LCI		
	Type	LCI 050/1050 N020	LCI 050/1050 T020	LCI 055/1400 T020
	Art. no.	24166468	86459218	86459219
Type		Assignable LED control gear		
STARK DLE 1100 930 SEL	89601296	✓	–	–
STARK DLE 2000 930 SEL	89601291	✓	✓	–
STARK DLE 3000 930 SEL	89601167	–	–	✓
STARK DLE 1100 940 SEL	89601297	✓	–	–
STARK DLE 2000 940 SEL	89601292	✓	✓	–
STARK DLE 3000 940 SEL	89601168	–	–	✓

Standards
EN 62031
EN 62471
EN 61347-1
EN 61547
EN 55015

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 DLE will be greatly reduced or the TALEXmodule STARK DLE may be destroyed.

Therefore the TALEXmodule STARK DLE needs to be mounted onto a heat sink.

Tridonic's excellent thermal design for the TALEXmodule STARK DLE 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 TALEXmodule STARK DLE 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 DLE 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 M4 screws.

The fixing/cooling surface must be cleaned before installing the TALEX modules to remove all dirt, dust and grease.

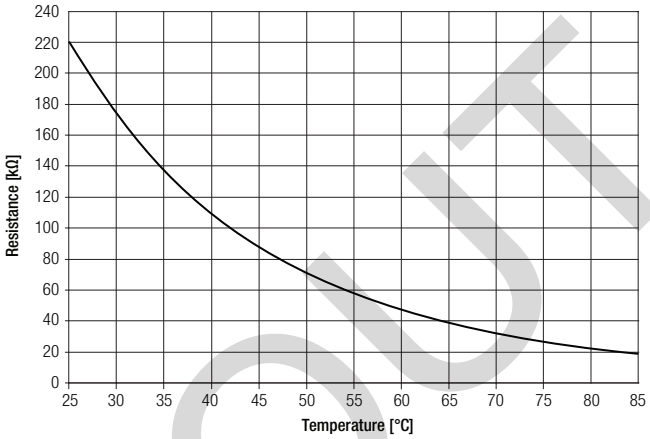
Max. torque for fixing: 0.5 Nm.

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

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.

Temperature control
An NTC resistor is on the board of the TALEXmodule STARK DLE to control the tp temperature during the operation with a resistor value of 220 kΩ NTC.



Heat sink values

TALEXmodule STARK DLE CLASSIC 1,100 lm

ta	tc	$R_{th, hs-a}$
25 °C	65 °C	4.3 K/W
35 °C	65 °C	3.4 K/W
45 °C	65 °C	2.4 K/W
55 °C	65 °C	1.4 K/W

TALEXmodule STARK DLE CLASSIC 2,000 lm

ta	tc	$R_{th, hs-a}$
25 °C	65 °C	2.1 K/W
35 °C	65 °C	1.6 K/W
45 °C	65 °C	1.1 K/W
55 °C	65 °C	0.5 K/W

TALEXmodule STARK DLE CLASSIC 3,000 lm

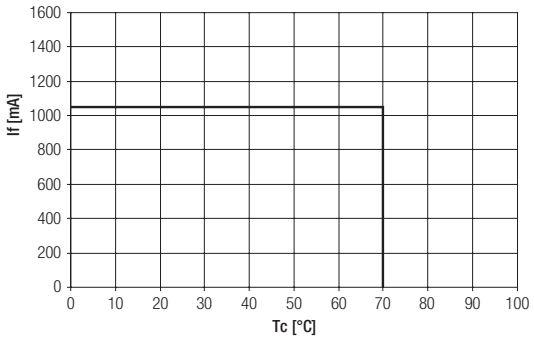
ta	tc	$R_{th, hs-a}$
25 °C	65 °C	1.5 K/W
35 °C	65 °C	1.1 K/W
45 °C	65 °C	0.7 K/W
55 °C	65 °C	0.3 K/W

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 DLE and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the TALEXmodule STARK DLE has to be fixed on the heat sink with M4 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.

Thermal behaviour

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

* according to the derating curve



Lumen maintenance

tp temperature in °C	luminous flux in %	operating time in h
25	80	60,000
	70	81,000
	50	132,000
45	80	44,000
	70	64,000
	50	110,000
65	80	32,000
	70	50,000
	50	91,000
75	80	25,000
	70	41,000
	50	81,000

Electrical supply/choice of LED control gear

TALEXmodule STARK DLE 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 TALEXconverter from Tridonic in combination with TALEXmodule STARK DLE guarantees the necessary protection for safe and reliable operation.

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 DLE 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 DLE.

Wiring

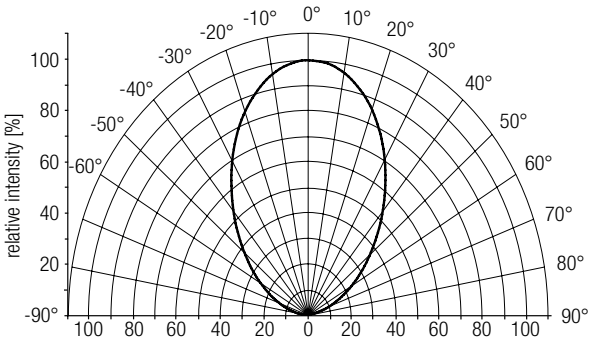
Cable: see page 2 (Accessories)

colour	red	black	grey	grey
function	+ LED	- LED	NTC	NTC

Optical characteristics TALEXmodule STARK DLE

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

TALEXmodule STARK DLE SELECT 80°: Light distribution



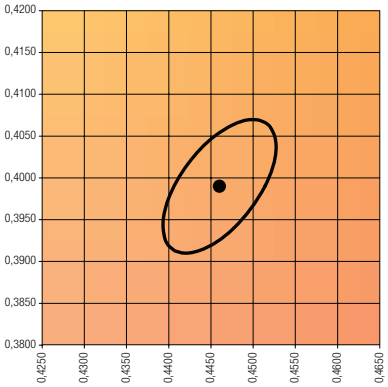
For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

Coordinates and tolerances according to CIE 1964

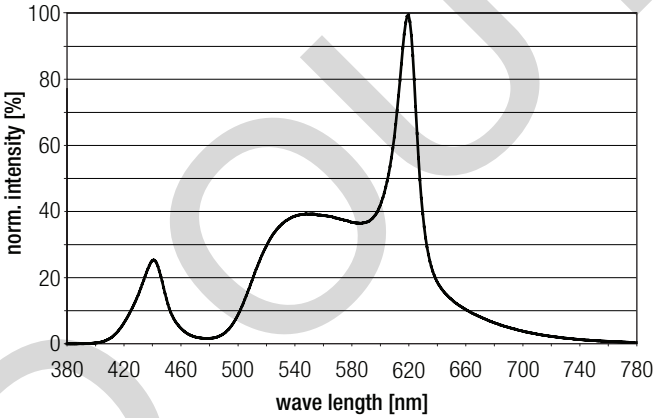
The specified colour coordinates are measured by a current impulse of with typical values of module after a settling time of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0,4460	0,3990

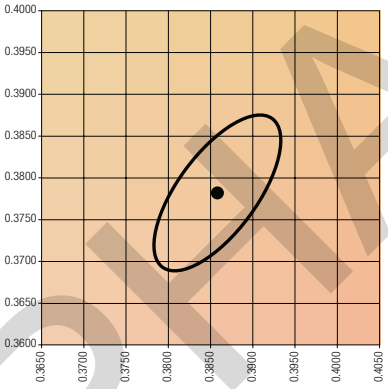


MacAdam ellipse: 3SDCM



4,000 K

	x0	y0
Centre	0,3860	0,3780



MacAdam ellipse: 3SDCM