



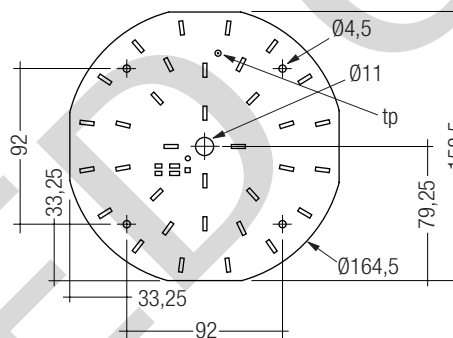
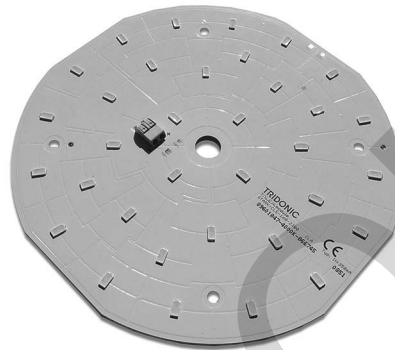
## TALEXmodule STARK CLE 160-2200 CLASSIC STARK CLE

### Product description

- Ideal for ceiling-mounted and wallmounted luminaires
- Efficiency of the module up to 125 lm/W
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 4<sup>®</sup>
- Small luminous flux tolerances
- Colour temperatures 3,000 and 4,000 K
- Self-cooling (no additional heat sink required)
- Push terminals for quick and simple wiring
- Simple installation (e.g. screws)
- Long life-time: 50,000 hours
- 5-year guarantee

### Technical data

Beam characteristic	120°
Ambient temperature $t_a$	-30 ... +50 °C
Typ. tp point	65 °C
Risk group (EN 62471:2008)	0
Type of protection	IP00



Standards, page 2

For colour temperatures and tolerances, page 5

### Ordering data

Type	Article number	Colour temperature	Packaging, carton	Weight per pc.
STARK-CLE-160-2200-830-CLA	89601846	3,000 K	50 pc(s).	0.074 kg
STARK-CLE-160-2200-840-CLA	89601847	4,000 K	50 pc(s).	0.074 kg

### Specific technical data

Type	Photometric code	Typ. luminous flux at tp 25 °C <sup>①</sup>	Typ. luminous flux at tp 65 °C <sup>①</sup>	Typ. forward current <sup>②</sup>	Typ. forward voltage	Typ. power consumption <sup>③</sup>	Luminous efficacy module at 25 °C	Luminous efficacy module at 65 °C	Luminous efficacy system at 65 °C	Colour rendering index CRI	Energy classification
<b>Operating mode at 350 mA</b>											
STARK-CLE-160-2200-830-CLA	830/4xx	2,130 lm	2,050 lm	350 mA	51.4 V	18 W	118 lm/W	114 lm/W	97 lm/W	> 80	A+
STARK-CLE-160-2200-840-CLA	840/4xx	2,280 lm	2,190 lm	350 mA	51.4 V	18 W	127 lm/W	122 lm/W	104 lm/W	> 80	A+

<sup>①</sup> Tolerance range for optical and electrical data: ±10 %.

<sup>②</sup> Max. permissible repetitive peak current: 480 mA.

<sup>③</sup> Max. permissible surge current: 0.54 A, duration max. 10 ms.

<sup>④</sup> Integrated measurement over the whole module.

## Standards

EN 62031  
EN 62471  
IEC 61000-4-2

## Photometric code

Key for photometric code, e. g. 830 / 449

1 <sup>st</sup> digit		2 <sup>nd</sup> + 3 <sup>rd</sup> digit	4 <sup>th</sup> digit	5 <sup>th</sup> digit	6 <sup>th</sup> digit	
Code	CRI	Colour temperature in Kelvin x 100	McAdams initial	McAdams after 25% of the life-time (max. 6,000h)	Lumen maintenance after 25% of the life-time (max.6000h)	
					Code	Remaining lumen
7	67 – 76				7	≥ 70 %
8	77 – 86				8	≥ 80 %
9	87 – ≥90		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 CLE will be greatly reduced or the TALEXmodule STARK CLE may be destroyed.

## 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 CLE a tp temperature of 65 °C has to be complied in order to achieve an optimum between 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.

The tc and tp temperature of LED modules from Tridonic are measured at the same reference point.

## Mounting instruction



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

Max. torque for fixing: 0.5Nm.

The LED modules are mounted with 4 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.

## 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>

### Thermal behaviour

storage temperature	-30 ... +80 °C
operating temperature $t_a$	-30 ... +50 °C
$t_p$ (at typ. current)	65 °C
$t_c$ max. (at typ. current)	75 °C
max. humidity*	0 ... 70 %

\* not condensed

### Lumen maintenance

tp temperature in °C	forward current in mA	luminous flux in %	operating time in h
65	350	70	> 45,000

### Electrical supply/choice of LED control gear

TALEXmodule STARK CLE 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 CLE guarantees the necessary protection for safe and reliable operation.

**!** TALEXmodule STARK LLE are basic isolated up to 190 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 190 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.

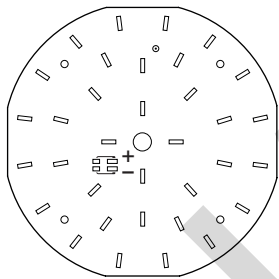
If a LED control gear other than Tridonic TALEXconverter is used, it must provide the following protection:

- Short-circuit protection
- Overload protection
- Overtemperature protection

**!** TALEXmodule STARK CLE 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.

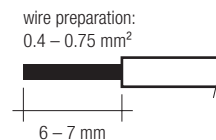
Wrong polarity can damage the TALEXmodule STARK CLE.

### Wiring



### Wiring type and cross section

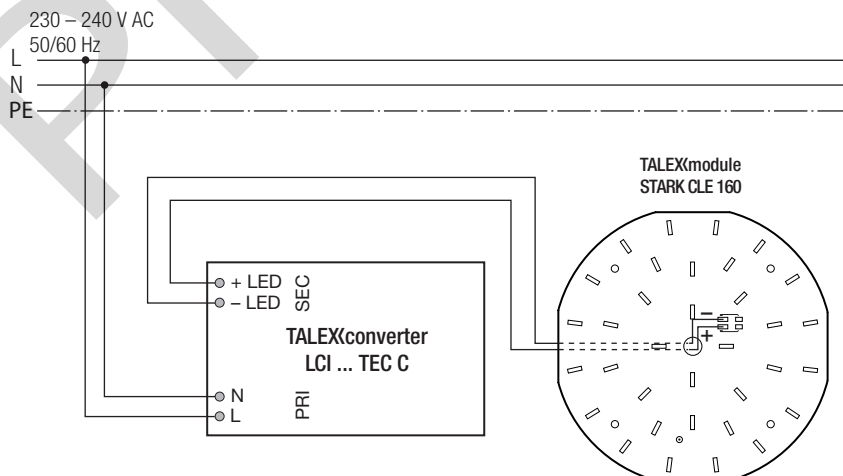
The wiring can be solid cable with a cross section of 0.4 to 0.75 mm<sup>2</sup>. For the push-wire connection you have to strip the insulation (6–7 mm). Loosen wire through twisting and pulling.



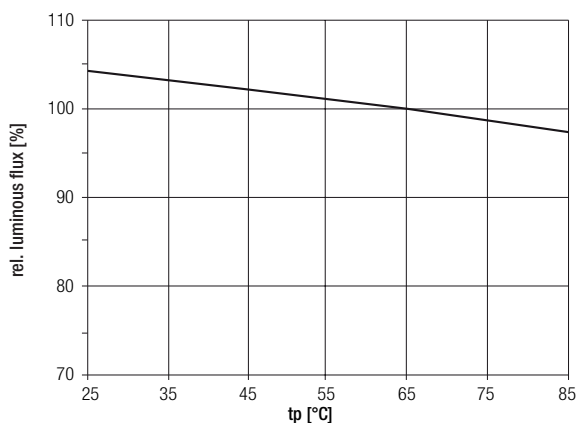
### Release of the wiring

Press down the "push button" and remove the cable from front.

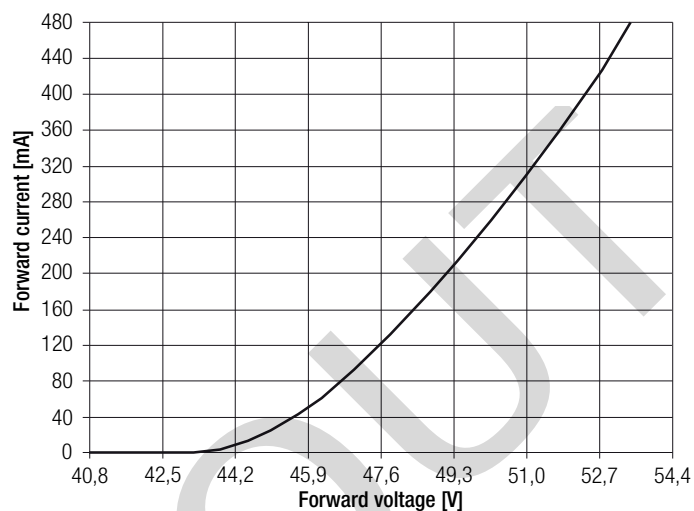
### Wiring example



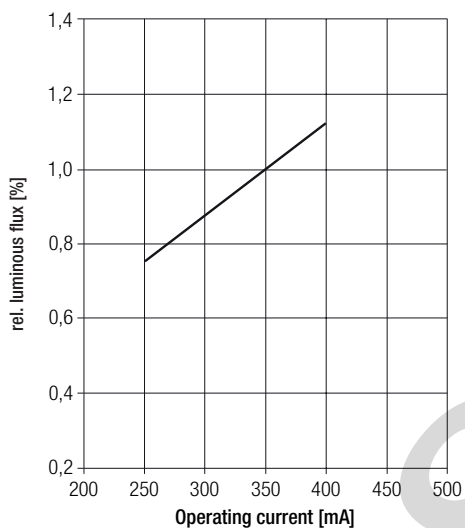
## Relative luminous flux



## Forward current vs. forward voltage



## Relative luminous flux vs. operating current

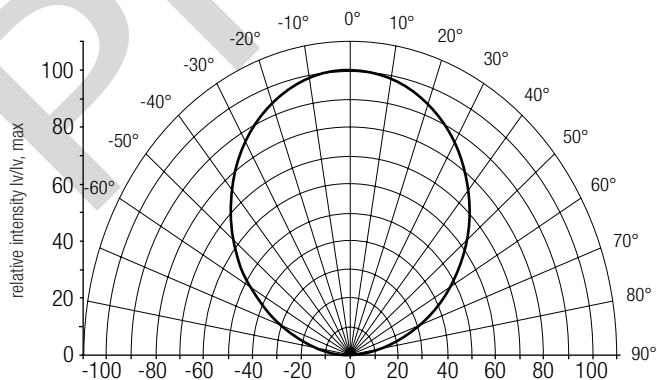


The diagrams based on statistic values.  
The real values can be different.

## Optical characteristics TALEX(module STARK CLE

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

## Light distribution



The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam *tbd*. To ensure an ideal mixture of colours and a homogenous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 5 cm) should be used.

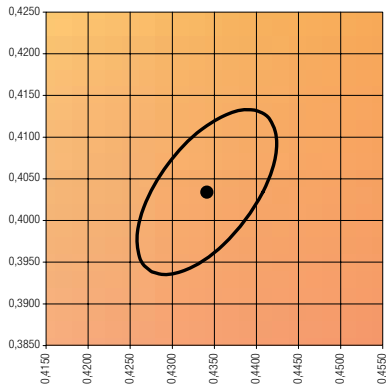
3D-Data, photometric data and Design-in guide available on request or go to [www.tridonic.com](http://www.tridonic.com)

**Coordinates and tolerances according to CIE 1931**

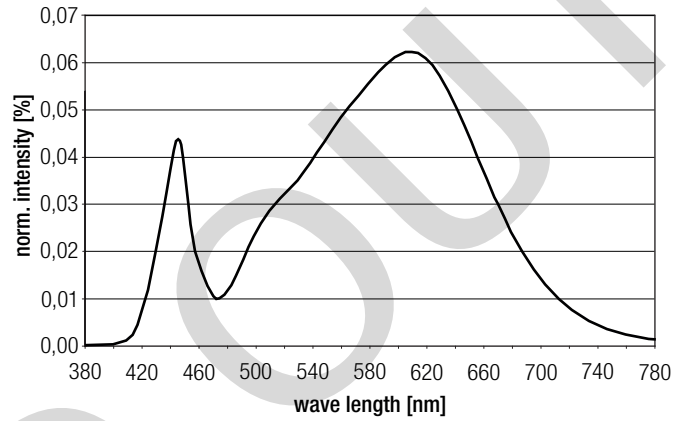
The specified colour coordinates are measured integral by a current impulse with typical values of module and a duration of 200 ms.  
The ambient temperature of the measurement is  $t_a = 25\text{ }^\circ\text{C}$ .  
The measurement tolerance of the colour coordinates are  $\pm 0.01$ .

**3,000 K**

	x0	y0
Centre	0.4344	0.4032

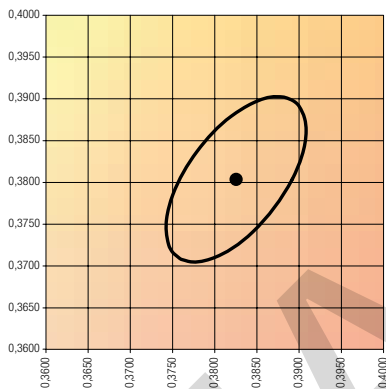


— MacAdam Ellipse: 4SDCM



**4,000 K**

	x0	y0
Centre	0.3828	0.3803



— MacAdam Ellipse: 4SDCM

