



TALEXmodule STARK CLE 315-4000 CLASSIC EM  
STARK CLE

### Product description

- Ideal for ceiling-mounted and wallmounted luminaires
- Based on annular and compact fluorescent lamps
- Efficiency of the module up to 127 lm/W
- SO version is compatible with SWITCH Sensor HF 5BP
- Integrated separate emergency LEDs controlled by EM powerLED
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3<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 <sub>a</sub> | -30 ... +35 °C |
| Typ. tp point                      | 65 °C          |
| Risk group (EN 62471:2008)         | 0              |
| Type of protection                 | IP00           |

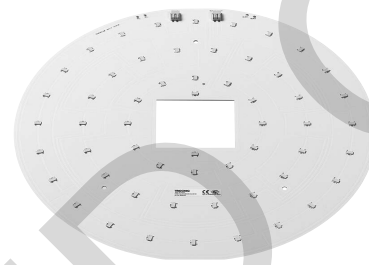


Standards, page 4

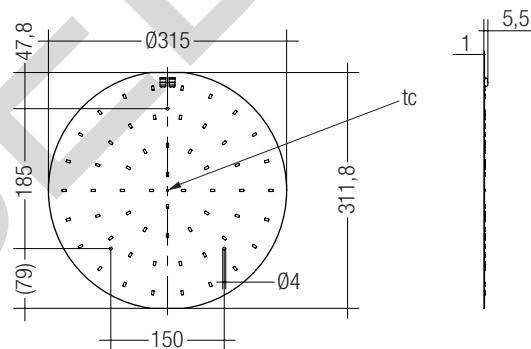
For colour temperatures and tolerances, page 7



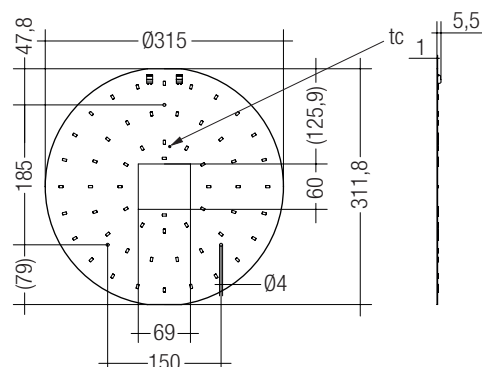
STARK-CLE-315-4000-EM



STARK-CLE-315-4000-EM-SO



STARK-CLE-315-4000-EM



STARK-CLE-315-4000-EM-SO

## Ordering data

| Type                             | Article number | Colour temperature | Packaging, carton | Weight per pc. |
|----------------------------------|----------------|--------------------|-------------------|----------------|
| STARK-CLE-315-4000-830-CLA-EM    | 28000303       | 3,000 K            | 40 pc(s).         | 0.160 kg       |
| STARK-CLE-315-4000-840-CLA-EM    | 28000304       | 4,000 K            | 40 pc(s).         | 0.160 kg       |
| STARK-CLE-315-4000-830-CLA-EM-SO | 28000305       | 3,000 K            | 40 pc(s).         | 0.153 kg       |
| STARK-CLE-315-4000-840-CLA-EM-SO | 28000306       | 4,000 K            | 40 pc(s).         | 0.153 kg       |

## Specific technical data

| Type <sup>®</sup>                                   | Photo-metric code | Typ. luminous flux at tp 25 °C <sup>®</sup> | Typ. luminous flux at tp 65 °C <sup>®</sup> | Typ. forward current <sup>®</sup> @ <sup>®</sup> | Min. forward voltage at tp = 65 °C | Max. forward voltage at tp = 25 °C | Typ. powercon-sumption <sup>®</sup> | 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 |
|-----------------------------------------------------|-------------------|---------------------------------------------|---------------------------------------------|--------------------------------------------------|------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------|-----------------------|
| <b>Operating mode HE at 700 mA</b>                  |                   |                                             |                                             |                                                  |                                    |                                    |                                     |                                      |                                      |                                      |                            |                       |
| STARK-CLE-315-4000-830-CLA EM                       | 830/3x9           | 2,600 lm                                    | 2,500 lm                                    | 700 mA                                           | 27.1 V                             | 34.3 V                             | 21.7 W                              | 120 lm/W                             | 115 lm/W                             | 104 lm/W                             | > 80                       | A+                    |
| STARK-CLE-315-4000-840-CLA EM                       | 840/3x9           | 2,750 lm                                    | 2,650 lm                                    | 700 mA                                           | 27.1 V                             | 34.3 V                             | 21.7 W                              | 127 lm/W                             | 122 lm/W                             | 110 lm/W                             | > 80                       | A++                   |
| STARK-CLE-315-4000-830-CLA EM-SO                    | 830/3x9           | 2,600 lm                                    | 2,500 lm                                    | 700 mA                                           | 27.1 V                             | 34.3 V                             | 21.7 W                              | 120 lm/W                             | 115 lm/W                             | 104 lm/W                             | > 80                       | A+                    |
| STARK-CLE-315-4000-840-CLA EM-SO                    | 840/3x9           | 2,750 lm                                    | 2,650 lm                                    | 700 mA                                           | 27.1 V                             | 34.3 V                             | 21.7 W                              | 127 lm/W                             | 122 lm/W                             | 110 lm/W                             | > 80                       | A++                   |
| <b>Operating mode HO at 1,050 mA</b>                |                   |                                             |                                             |                                                  |                                    |                                    |                                     |                                      |                                      |                                      |                            |                       |
| STARK-CLE-315-4000-830-CLA EM                       | 830/3x9           | 3,700 lm                                    | 3,550 lm                                    | 1,050 mA                                         | 28.9 V                             | 36.0 V                             | 34.1 W                              | 110 lm/W                             | 106 lm/W                             | 95 lm/W                              | > 80                       | A+                    |
| STARK-CLE-315-4000-840-CLA EM                       | 840/3x9           | 3,900 lm                                    | 3,750 lm                                    | 1,050 mA                                         | 28.9 V                             | 36.0 V                             | 34.1 W                              | 114 lm/W                             | 110 lm/W                             | 99 lm/W                              | > 80                       | A+                    |
| STARK-CLE-315-4000-830-CLA EM-SO                    | 830/3x9           | 3,700 lm                                    | 3,550 lm                                    | 1,050 mA                                         | 28.9 V                             | 36.0 V                             | 34.1 W                              | 110 lm/W                             | 106 lm/W                             | 95 lm/W                              | > 80                       | A+                    |
| STARK-CLE-315-4000-840-CLA EM-SO                    | 840/3x9           | 3,900 lm                                    | 3,750 lm                                    | 1,050 mA                                         | 28.9 V                             | 36.0 V                             | 34.1 W                              | 114 lm/W                             | 110 lm/W                             | 99 lm/W                              | > 80                       | A+                    |
| <b>Emergency mode at 600 mA (EM powerLED 2 W)</b>   |                   |                                             |                                             |                                                  |                                    |                                    |                                     |                                      |                                      |                                      |                            |                       |
| STARK-CLE-315-4000-830-CLA EM                       | 830/3x9           | 240 lm                                      | 235 lm                                      | 600 mA                                           | 2.7 V                              | 3.8 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-840-CLA EM                       | 840/3x9           | 250 lm                                      | 240 lm                                      | 600 mA                                           | 2.7 V                              | 3.8 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-830-CLA EM-SO                    | 830/3x9           | 240 lm                                      | 235 lm                                      | 600 mA                                           | 2.7 V                              | 3.8 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-840-CLA EM-SO                    | 840/3x9           | 250 lm                                      | 240 lm                                      | 600 mA                                           | 2.7 V                              | 3.8 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| <b>Emergency mode at 1,000 mA (EM powerLED 4 W)</b> |                   |                                             |                                             |                                                  |                                    |                                    |                                     |                                      |                                      |                                      |                            |                       |
| STARK-CLE-315-4000-830-CLA EM                       | 830/3x9           | 370 lm                                      | 355 lm                                      | 1,000 mA                                         | 2.8 V                              | 3.9 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-840-CLA EM                       | 840/3x9           | 385 lm                                      | 365 lm                                      | 1,000 mA                                         | 2.8 V                              | 3.9 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-830-CLA EM-SO                    | 830/3x9           | 370 lm                                      | 355 lm                                      | 1,000 mA                                         | 2.8 V                              | 3.9 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |
| STARK-CLE-315-4000-840-CLA EM-SO                    | 840/3x9           | 385 lm                                      | 365 lm                                      | 1,000 mA                                         | 2.8 V                              | 3.9 V                              | –                                   | –                                    | –                                    | –                                    | –                          | –                     |

<sup>®</sup> Central measurement over the whole module.<sup>®</sup> Tolerance range for optical and electrical data: ±10 %.<sup>®</sup> Max. permissible repetitive peak current: 1,200 mA<sup>®</sup> Max. permissible surge current: 2.5 A, duration max. 10 µs.<sup>®</sup> HE ... high efficiency, Ho ... high output.



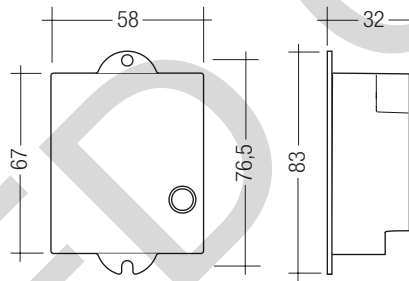
ACCES-  
SORIES

## SWITCH Sensor HF 5BP

Automatic switching based on motion and light level

### Product description

- Motion detector for luminaire installation
- Motion detection through glass and thin materials (except metal)
- For automatic on/off switching of electronic ballasts with corridor-FUNCTION
- "Bright-Out" function: luminaire is not switched on if there is adequate brightness
- Delay time, detection range and light value for the "Bright-Out" function can be set via 3 potentiometers
- Max. installation height 5 m
- Infinitely variable range (0.5 – 5.0 m)



### Technical data

|                           |                                 |
|---------------------------|---------------------------------|
| Rated supply voltage      | 230 – 240 V                     |
| Mains frequency           | 50 Hz                           |
| Power                     | < 0.5 W                         |
| Ambient temperature $t_a$ | -20 ... +75 °C                  |
| Storage temperature $t_s$ | -20 ... +75 °C                  |
| Humidity                  | min. 5 % ... max. 85 % at 30 °C |
| Type of protection        | IP20                            |
| Casing material           | PC, halogen-free                |
| Casing colour             | RAL 9016                        |

### Ordering data

| Type                 | Article number | Packaging, carton | Weight per pcs. |
|----------------------|----------------|-------------------|-----------------|
| SWITCH Sensor HF 5BP | 28000086       | 4 pc(s).          | 0,079 kg        |

### Specific technical data

| Type                 | Dimensions LxWxH | Detection       |                    |           | Output, relay (L') |                                                  |
|----------------------|------------------|-----------------|--------------------|-----------|--------------------|--------------------------------------------------|
|                      |                  | Detection angle | Transmission power | Frequency | L' (switched line) | Switching output (at 240 V AC max.) <sup>①</sup> |
| SWITCH Sensor HF 5BP | 83x58x32 mm      | 160°            | 1 mW               | 5.8 GHz   | 230 – 240 V        | 1,000 W / 4 A (ohmic load)                       |

① Inductive: 500 VA,  $\cos \phi > 0.5$ ; capacitive: max. 2 ECG (à 54 W, max. 50  $\mu$ F); inrush current: max. 160 A / 200  $\mu$ s; up to 100.000 switching cycles.

**Standards**

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

**Photometric code**

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

| 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                                     |                                    |                                                  | Lumen maintenance after 25% of the life-time (max.6000h) |
| 7                     | 67 – 76                                 | Colour temperature in Kelvin x 100 | McAdams after 25% of the life-time (max. 6,000h) | Code                                                     |
| 8                     | 77 – 86                                 |                                    |                                                  | Remaining lumen                                          |
| 9                     | 87 – ≥90                                |                                    |                                                  | 7 ≥ 70 %                                                 |
|                       |                                         |                                    |                                                  | 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 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: 0.5 Nm.

The LED modules are mounted with 3 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.



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>

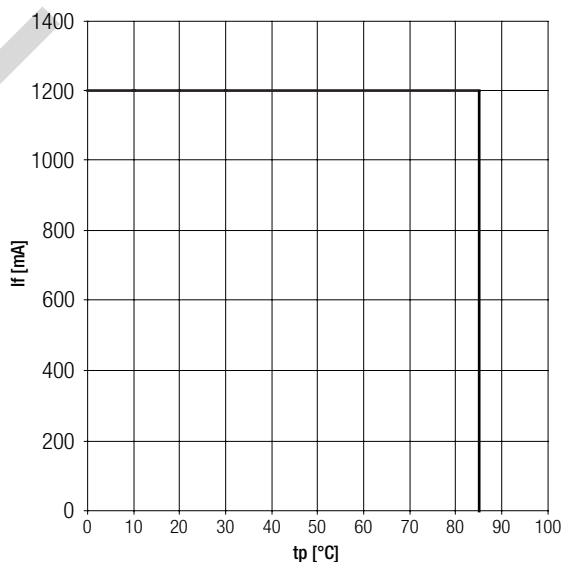
**Heat sink values****TALEXmodule STARK-CLE-315**

| ta    | tp    | Forward current | R <sub>th, hs-a</sub> | Cooling area |
|-------|-------|-----------------|-----------------------|--------------|
| 35 °C | 65 °C | 700 mA          |                       | self-cooling |
| 35 °C | 65 °C | 1,050 mA        |                       | self-cooling |
| 45 °C | 65 °C | 700 mA          |                       | self-cooling |
| 45 °C | 65 °C | 1,050 mA        |                       | –            |

**Thermal behaviour**

|                           |                |
|---------------------------|----------------|
| storage temperature       | -40 ... +85 °C |
| operating temperature ta  | -30 ... +35 °C |
| tp (at typ. current)      | 65 °C          |
| tc max. (at typ. current) | 85 °C          |
| max. humidity*            | 0 ... 80 %     |

\* not condensed



## Lumen maintenance for TALEXmodule CLE-315-4000

| Operating current | tp temperature | L80 / F50 | L70 / F50 | L50 / F50  |
|-------------------|----------------|-----------|-----------|------------|
| 700 mA            | 65 °C          | 35,000 h  | 55,000 h  | >100,000 h |
| 1,050 mA          | 65 °C          | 25,000 h  | 40,000 h  | 75,000 h   |

## Life-time, lumen maintenance and failure rate

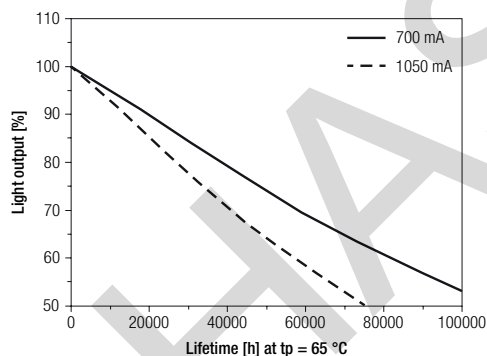
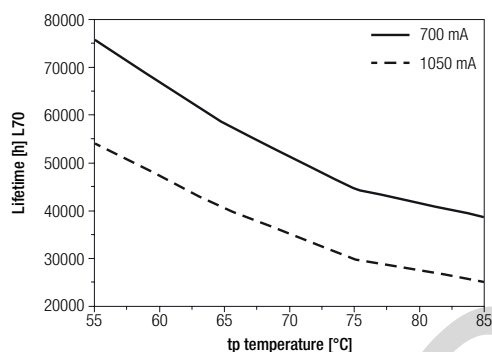
The light output of an LED Module decreases over the life-time, this is characterized with the L value.

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.



## 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.

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.

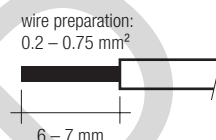
Operation with a constant voltage LED control gear will lead to an irreversible damage of the module.

Wrong polarity can damage the TALEXmodule STARK CLE.

## Wiring type and cross section

The wiring can be solid cable with a cross section of 0.2 to 0.75 mm<sup>2</sup>. For the push-wire connection you have to strip the insulation (6–7 mm).

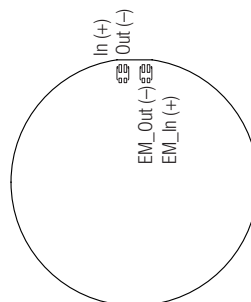
Loosen wire through twisting and pulling.



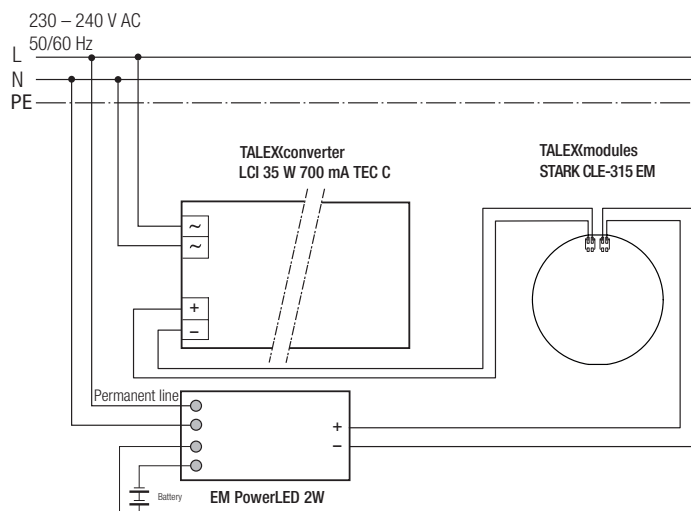
## Release of the wiring

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

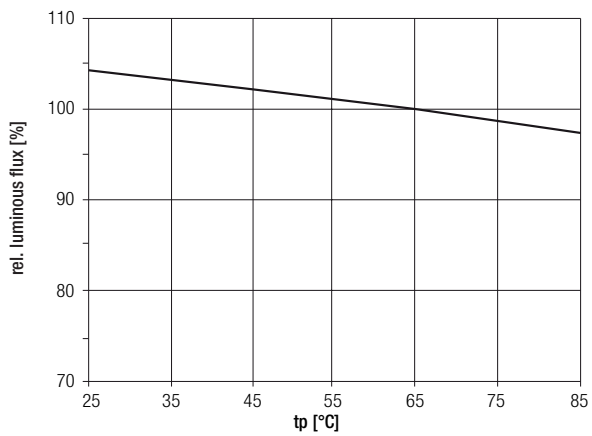
## Wiring



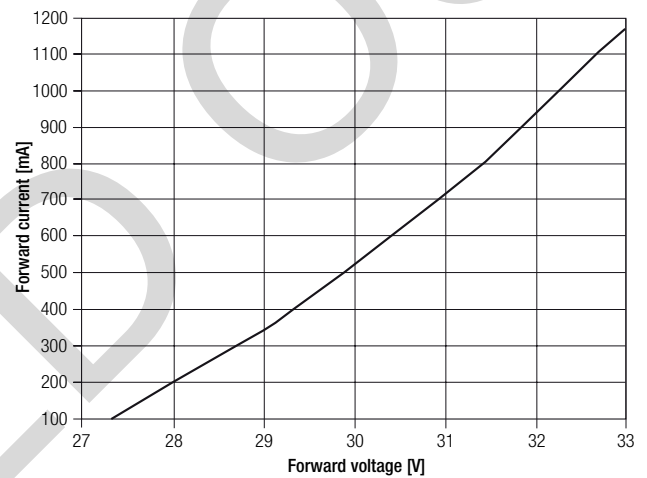
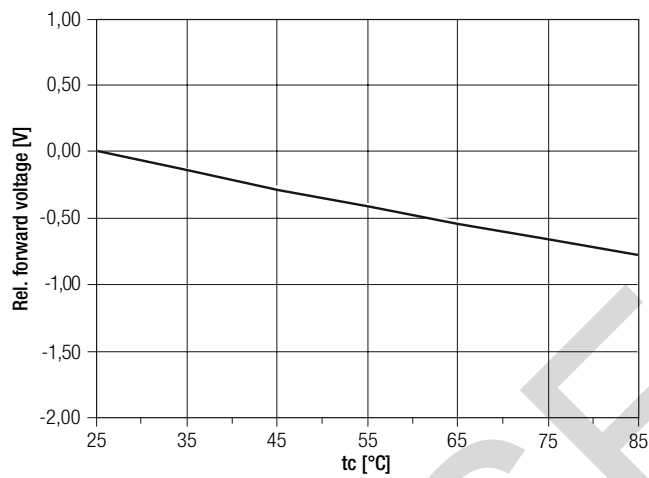
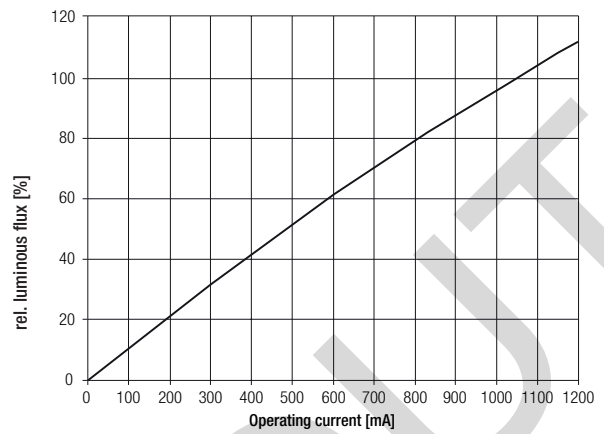
## Wiring examples



Relative luminous flux



Relative luminous flux vs. operating current

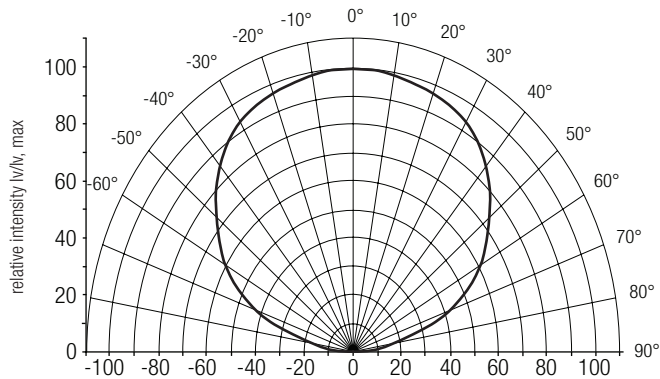


The diagrams based on statistic values.  
The real values can be different.

## Optical characteristics TALEXmodule STARK CLE

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

### Light distribution



The colour temperature is measured central over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 7. 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.

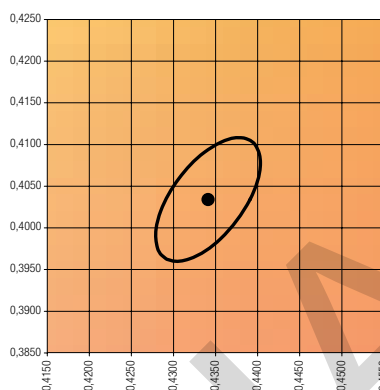
For further information see Design-in Guide, 3D data and photometric data on [www.tridonic.com](http://www.tridonic.com) or on request.

### Coordinates and tolerances according to CIE 1931

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

#### 3,000 K

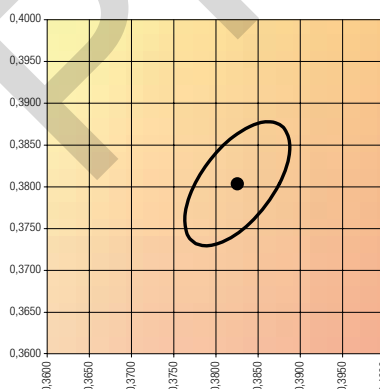
|        | x0     | y0     |
|--------|--------|--------|
| Centre | 0.4344 | 0.4032 |



— MacAdam ellipse: 3SDCM

#### 4,000 K

|        | x0     | y0     |
|--------|--------|--------|
| Centre | 0.3828 | 0.3803 |



— MacAdam ellipse: 3SDCM

