RoHS

TALEXmodule STARK CLE 220-1500 CLASSIC EM

STARK CLE

Product description

- Ideal for ceiling-mounted and wallmounted luminaires
- LED system solution consisting of the LED module, the control gear with integrated emergency function and SWITCH sensor
- Based on circular and TC-DD fluorescent lamps
- Efficacy of the module up to 136 lm/W
- SO version is compatible with SWITCH Sensor HF 5BP – Simple CORRIDOR FUNCTION in combination with EMpowerLED 15 W
- Integrated separate emergency LEDs controlled by EM powerLED
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3①
- 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 system guarantee on the complete product

Technical data

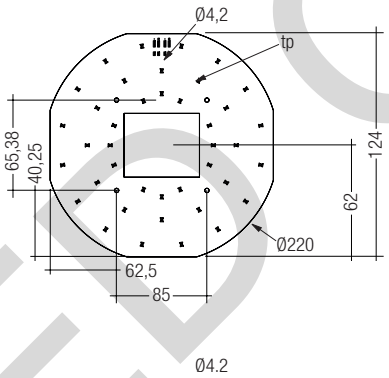
Beam characteristic	120°
Ambient temperature ta	-30 ... +45 °C
Typ. tp point	65 °C
Risk group (EN 62471:2008)	0
Type of protection	IP00

Standards, page 5

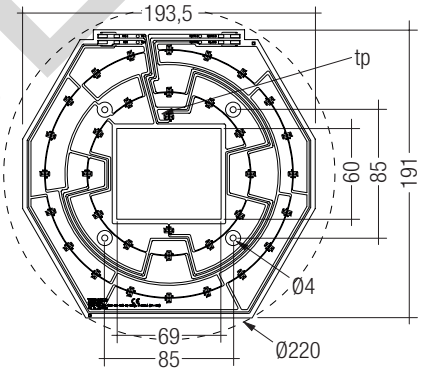
For colour temperatures and tolerances, page 9

STARK-CLE-220-1500-EM

STARK-CLE-220-1500-EM-SO



STARK-CLE-220-1500-EM



STARK-CLE-220-1500-EM-SO

Ordering data

Type	Article number	Colour temperature	Packaging, carton	Weight per pc.
STARK-CLE-220-1500-830-CLA-EM	**28000106**	3,000 K	160 pc(s).	0.060 kg
STARK-CLE-220-1500-840-CLA-EM	**28000107**	4,000 K	160 pc(s).	0.060 kg
STARK-CLE-220-1500-830-CLA-EM-SO	**28000108**	3,000 K	160 pc(s).	0.055 kg
STARK-CLE-220-1500-840-CLA-EM-SO	**28000109**	4,000 K	160 pc(s).	0.054 kg

Specific technical data

Type[5]	Photo-metric code	Typ. luminous flux at tp 25 °C[2]	Typ. luminous flux at tp 65 °C[2]	Typ. forward current[2 3 4]	Typ. forward voltage	Typ. power consumption[2]	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 clas-sification
Operating mode HE at 350 mA											
STARK-CLE-220-1500-830-CLA EM	830/3x9	1,350 lm	1,300 lm	350 mA	29.5 V	10.3 W	~ 131 lm/W	~ 126 lm/W	~ 107 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM	840/3x9	1,400 lm	1,350 lm	350 mA	29.5 V	10.3 W	~ 136 lm/W	~ 131 lm/W	~ 111 lm/W	> 80	A+
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	1,350 lm	1,300 lm	350 mA	29.5 V	10.3 W	~ 131 lm/W	~ 126 lm/W	~ 107 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	1,400 lm	1,350 lm	350 mA	29.5 V	10.3 W	~ 136 lm/W	~ 131 lm/W	~ 111 lm/W	> 80	A+
Operating mode HO at 470 mA											
STARK-CLE-220-1500-830-CLA EM	830/3x9	1,750 lm	1,650 lm	470 mA	30.5 V	14.3 W	~ 122 lm/W	~ 115 lm/W	~ 98 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM	840/3x9	1,800 lm	1,700 lm	470 mA	30.5 V	14.3 W	~ 126 lm/W	~ 119 lm/W	~ 101 lm/W	> 80	A+
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	1,750 lm	1,650 lm	470 mA	30.5 V	14.3 W	~ 122 lm/W	~ 115 lm/W	~ 98 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	1,800 lm	1,700 lm	470 mA	30.5 V	14.3 W	~ 126 lm/W	~ 119 lm/W	~ 101 lm/W	> 80	A+
Operating mode HO at 500 mA											
STARK-CLE-220-1500-830-CLA EM	830/3x9	1,800 lm	1,750 lm	500 mA	30.5 V	15.3 W	~ 118 lm/W	~ 114 lm/W	~ 97 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM	840/3x9	1,900 lm	1,800 lm	500 mA	30.5 V	15.3 W	~ 124 lm/W	~ 118 lm/W	~ 100 lm/W	> 80	A+
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	1,800 lm	1,750 lm	500 mA	30.5 V	15.3 W	~ 118 lm/W	~ 114 lm/W	~ 97 lm/W	> 80	A+
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	1,900 lm	1,800 lm	500 mA	30.5 V	15.3 W	~ 124 lm/W	~ 118 lm/W	~ 100 lm/W	> 80	A+
Emergency mode at 320 mA (EM powerLED NM 1 W BASIC, EM powerLED 15 W BASIC CLE NiCd)											
STARK-CLE-220-1500-830-CLA EM	830/3x9	125 lm	120 lm	320 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM	840/3x9	130 lm	125 lm	320 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	125 lm	120 lm	320 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	130 lm	125 lm	320 mA	2.95 V	–	–	–	–	–	–
Emergency mode at 350 mA (EM powerLED 1 W)											
STARK-CLE-220-1500-830-CLA EM	830/3x9	135 lm	130 lm	350 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM	840/3x9	140 lm	135 lm	350 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	135 lm	130 lm	350 mA	2.95 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	140 lm	135 lm	350 mA	2.95 V	–	–	–	–	–	–
Emergency mode at 400 mA (EM powerLED 15 W BASIC CLE NiMH)											
STARK-CLE-220-1500-830-CLA EM	830/3x9	150 lm	145 lm	400 mA	3.0 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM	840/3x9	160 lm	150 lm	400 mA	3.0 V	–	–	–	–	–	–
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	150 lm	145 lm	400 mA	3.0 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	160 lm	150 lm	400 mA	3.0 V	–	–	–	–	–	–
Emergency mode at 600 mA (EM powerLED 2 W)											
STARK-CLE-220-1500-830-CLA EM	830/3x9	220 lm	210 lm	600 mA	3.1 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM	840/3x9	230 lm	220 lm	600 mA	3.1 V	–	–	–	–	–	–
STARK-CLE-220-1500-830-CLA EM-SO	830/3x9	220 lm	210 lm	600 mA	3.1 V	–	–	–	–	–	–
STARK-CLE-220-1500-840-CLA EM-SO	840/3x9	230 lm	220 lm	600 mA	3.1 V	–	–	–	–	–	–

[1] Integrated measurement over the whole module.

[2] Tolerance range for optical and electrical data: ±10 %.

[3] Max. permissible repetitive peak current: 720 mA

[4] Max. permissible surge current: 1.5 A, duration max. 10 µs.

[5] HE ... high efficiency, Ho ... high output.

RoHS

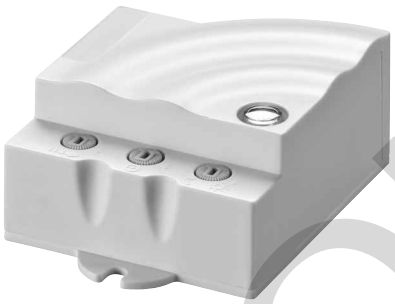
ACCES-SORIES

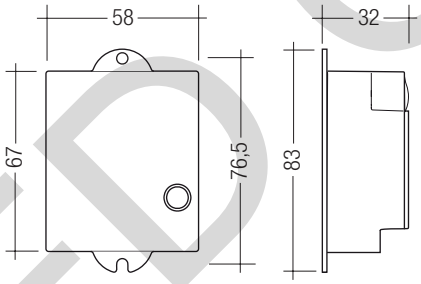
SWITCH Sensor HF 5BP

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 ta	-20 ... +75 °C
Storage temperature ts	-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 pieces	0,078 kg

Specific technical data

Type	Dimensions LxWxH	Detection			Output, relay (L')
		Detection angle	Transmission power	Frequency	L' (switched line)
SWITCH Sensor HF 5BP	83x58x32 mm	160°	1 mW	5.8 GHz	230 – 240 V

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

Photometric code

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

1st digit		2nd + 3rd digit	4th digit	5th digit	6th digit	
Code	CRI	Colour temperature in Kelvin x 100	McAdams initial	McAdams after 25% of the life-time (max. 6,000h)	Lumen maintanance 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: 0.5 Nm.

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.

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.

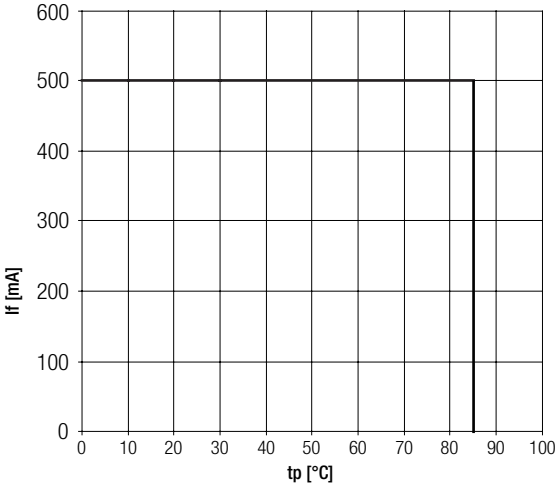
Materials which are used in LED applications (e.g. sealings, adhesives) must not produce dissolver gas. They must not be condensation curing based, acetate curing based or contain sulfur, chlorine or phthalate. Avoid corrosive atmosphere during usage and storage.

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

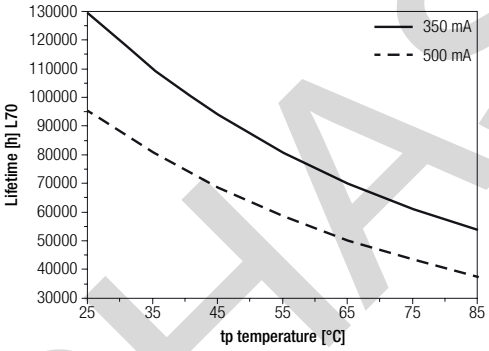
Thermal behaviour

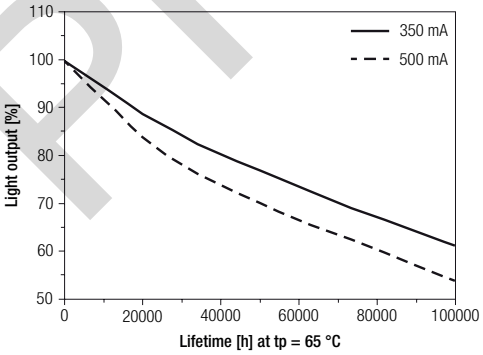
storage temperature	-40 ... +85 °C
operating temperature ta	-30 ... +45 °C
tp max. (at typ. current)	85 °C
max. humidity	0 ... 80 %



Life-time

tp temperature in °C	I_F	luminous flux in %	life-time in h
65	350 mA	80	40,000
		70	70,000
		50	140,000





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.

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

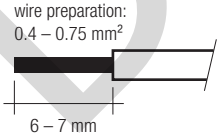
- Short-circuit protection
- Overload protection
- Overtemperature protection

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

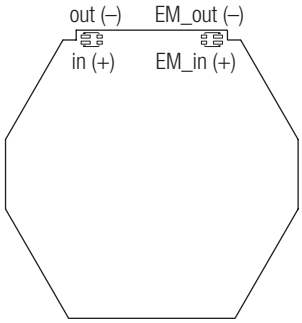
The wiring can be solid cable with a cross section of 0.4 to 0.75 mm². For the push-wire connection you have to strip the insulation (6–7 mm).
Loosen wire through twisting and pulling.



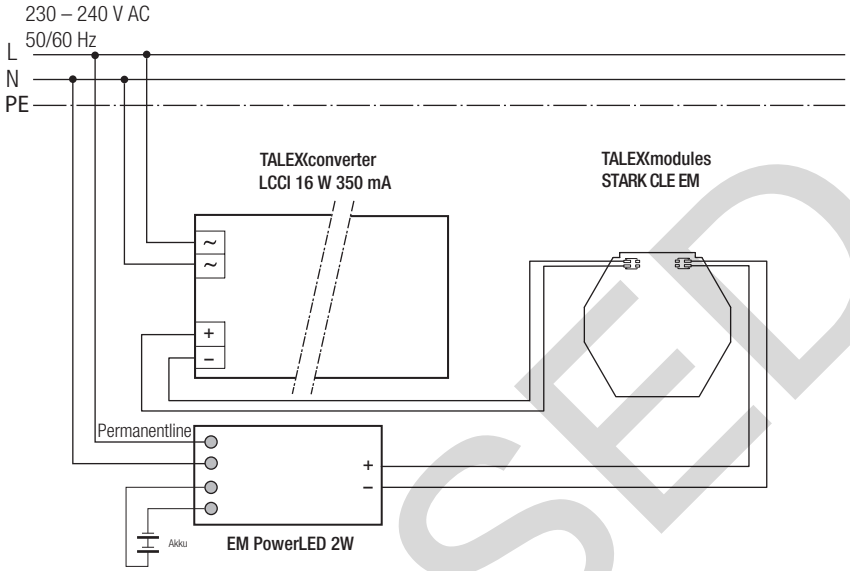
Release of the wiring

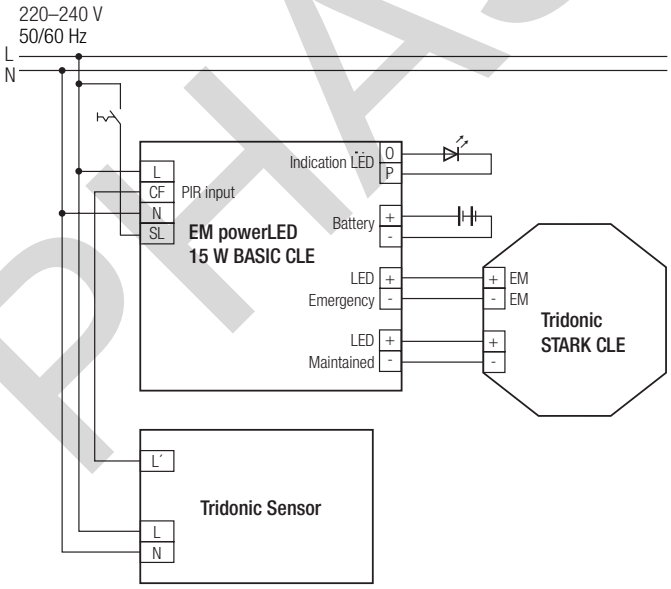
Press down the “push button” and remove the cable from front.

Wiring

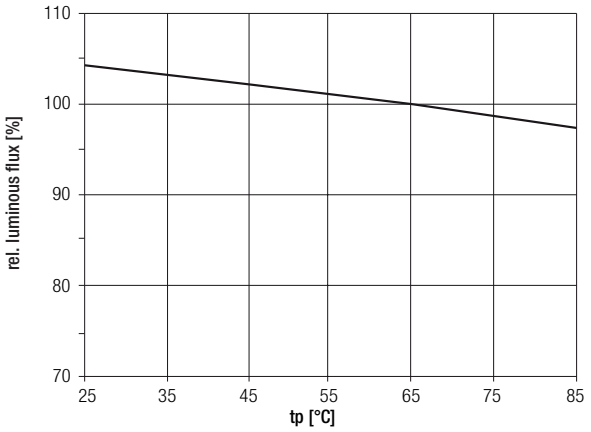


Wiring examples

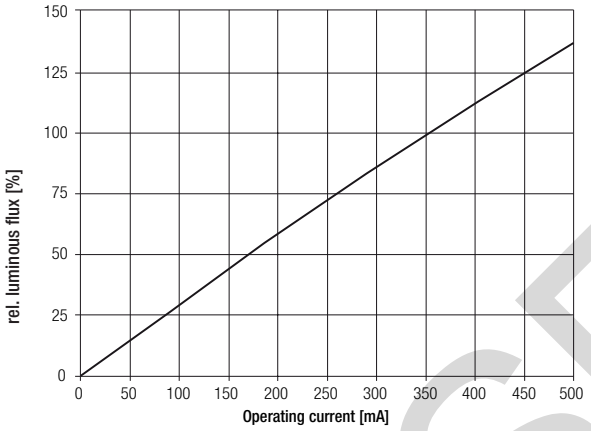




Relative luminous flux



Relative luminous flux vs. operating current

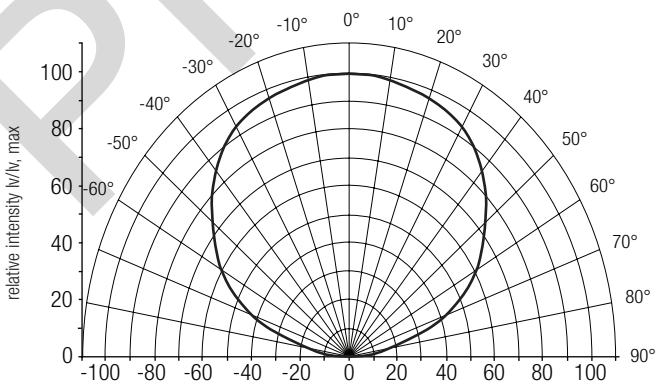


The diagrams based on statistic values.
The real values can be different.

Optical characteristics TALEXmodule STARK CLE

The optical design of the TALEXmodule STARK CLE product line ensures optimum homogenity 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 7.
To ensure an ideal mixture of colours and a homogenious light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 5 cm) should be used.

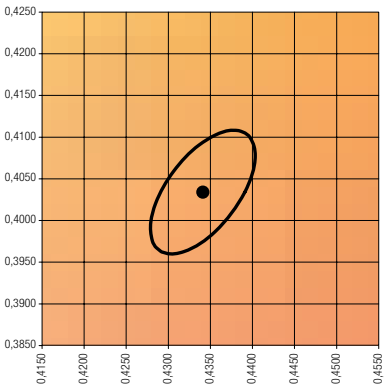
For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

Coordinates and tolerances according to CIE 1931

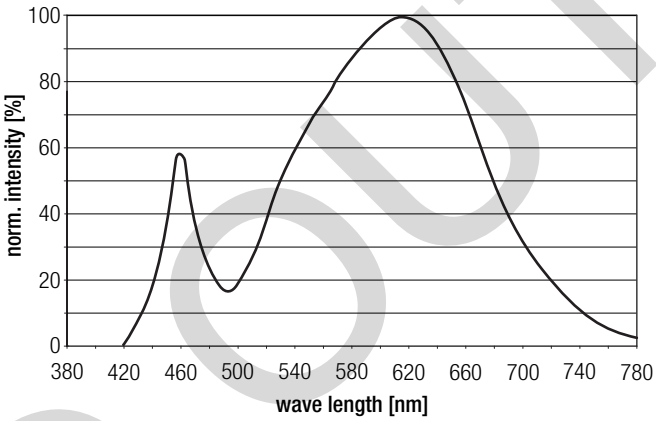
The specified colour coordinates are measured by a current impulse with typical values of module and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4344	0.4032

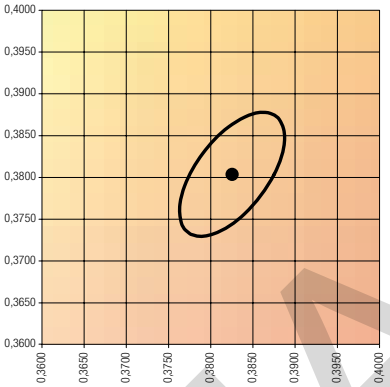


MacAdam Ellipse: 3SDCM



4,000 K

	x0	y0
Centre	0.3828	0.3803



MacAdam Ellipse: 3SDCM