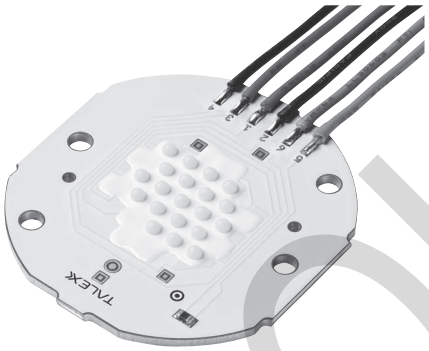
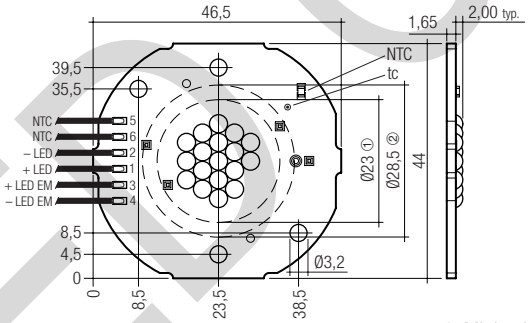
CE RoHS

TALEX(module SPOT P320-3 EM

TALEX(module SPOT





① Minimal reflector diameter
② Maximum reflector diameter

Product description

- Spotlights
- Downlights
- High-flux LED module
- Narrow colour temperature tolerance band
- Lifetime up to 50,000 hours
- Compact design
- Excellent thermal management①
- NTC for temperature control
- High-power LED in chip-on-board technololgy
- Beam characteristic: 140°
- Uniform distribution of light
- Fixing holes for M3 screws
- Connection: Cable 300 mm
- Built-in LED module
- Cooling required

Technical data

Beam characteristic	140°
Ambient temperature ta	-30 ... +55 °C
Typ. tc point	65 °C
Weight	0.015 kg
Risk group (EN 62471:2008)	0

Standards, page 3

Colour temperatures and tolerances, page 6

Ordering data

Colour temperature	Type	Article number
3,000 K	**LED P320-3 EM 3000K 47x44**	**89601433**
4,000 K	**LED P320-3 EM 4000K 47x44**	**89601434**

Packaging: 20 pieces/packaging, 360 pieces/carton

Specific technical data

Type	Photometric code	Typ. luminous flux at 350 mA②③④	Typ. luminous flux at 700 mA②③④	Typ. luminous flux at 1,050 mA②③	Typ. forward voltage②③	Power consumption module	Typ. Efficacy	Colour rendering index CRI
Normal operation								
LED P320-3 EM 3000K 47x44	830/4x9	–	1,340 lm	1,850 lm	28.8 V	20.2 W	67 lm/W	> 80
LED P320-3 EM 4000K 47x44	840/4x9	–	1,480 lm	2,050 lm	28.8 V	20.2 W	74 lm/W	> 80
Emergency operation – 350 mA								
LED P320-3 EM 3000K 47x44	830/4x9	150 lm	–	–	6,2 V	2.2 W	67 lm/W	> 80
LED P320-3 EM 4000K 47x44	840/4x9	160 lm	–	–	6,2 V	2.2 W	74 lm/W	> 80

All values for ta = 25 °C, tc = 65 °C.

① If the maximum temperature limits are exceeded, the life of the module will be greatly reduced or the module may be damaged. The temperature of the TALEX(module SPOT at the tc point in the thermally stable state by mean of a temperature sensor or temperature-sensitive sticker as per EN 60598-1. For the precise position of the tc point see the drawing above.

② At tc = 65 °C.

③ Tolerance range for optical and electrical data: ±15 %.

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

Converter / controls matrix – TALEXXmodule SPOT P320-3 EM in normal operation

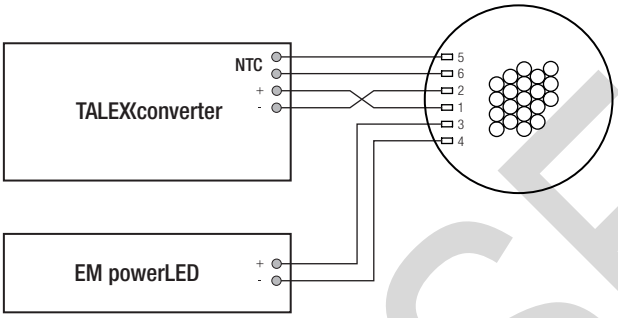
	Converter REMOTE LCI								Controls IN-BUILT					
Type	LCAI 30 W 700 mA one4all		LCI 30 W 700 mA		LCI 50 W 1050mA T020		LCAI 50 W 1050 mA T020		LCI 50 W 1050 mA R10		LCAI 50 W 1050 mA R010		C700 dim	
Article number	86458900		24166314		86459218		86459247		86453216		86459245		86458945	
Type	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
TALEXXmodule SPOT P320-3 EM	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Converter matrix – TALEXXmodule SPOT P320-3 EM in emergency operation

	Converter for emergency operation					
Type	EM powerLED 2 W BASIC screw-fix	EM powerLED 2 W BASIC clip-fix	EM powerLED 2 W ST screw-fix	EM powerLED 2 W ST clip-fix	EM powerLED 2 W PRO EZ-3 screw-fix	EM powerLED 2 W PRO EZ-3 clip-fix
Article number	89899859	89899866	89899861	89899868	89800030	89800032

	Assignable converter											
Type	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
TALEXXmodule SPOT P320-3 EM	1	1	1	1	1	1	1	1	1	1	1	1

Wiring diagram converter + Emergency device EM powerLED



Wiring

Cable: AWG24; length 300 mm

pin	1	2	3	4	5	6
function	+ (LED)	- (LED)	+ (EM)	- (EM)	NTC (LED)	NTC (LED)
colour	red	black	red	black	grey	grey

ACCES-SORIES

TALEXXaccessory Cover Spot

Product description

- Housing for LED module
- Diameter: 50 mm

Ordering data

Typ	Article number
P 320-3 EM LED cover white D50 LES 23 mm	88167489

Packaging: 20 pieces/packaging, 400 pieces/carton

Standards
EN 62031
EN 62471

Photometric code

Key for photometric code, e. g. 830 / 559

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 lifetime (max.6000h)	Lumen maintanance after 25% of the lifetime (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 TALEX(module SPOT will be greatly reduced or the TALEX(module SPOT may be destroyed.

Therefore the TALEX(module SPOT P320-3 EM needs to be mounted onto a heat sink.

Tridonic's excellent thermal design for the TALEX(module SPOT products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life time.

tc point, ambient temperature and lifetime
The temperature at tc reference point is crucial for the light output and life time of a TALEX(product.

For TALEX(module SPOT P320-3 EM a tc 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 tc 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

TALEX(module SPOT 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 with plastic washer.

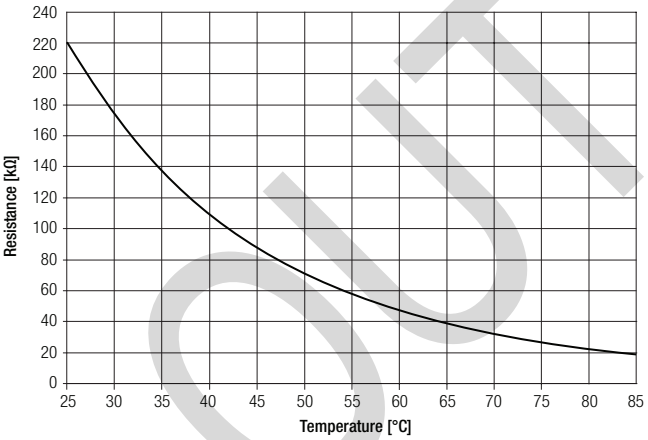
The fixing/cooling surface must be cleaned before installing the TALEX(modules to remove all dirt, dust and grease.

None of the components of the TALEX(module SPOT (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

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/com/en/technical-docs.asp

Temperature control
An NTC resistor is on the board of the TALEX(module SPOT P320-3 EM to control the tc temperature during the operation.
Exact position see drawing on page 1.
The details of the 220 kΩ NTC (order number B57431V2223J062) you can find in the data sheet of the manufacturer AVX (Nr. NB12QØØ224).



Typical heat sink surface

TALEX(module SPOT P320-3 EM, 700 mA

ta	tc	$R_{th, hs-a}$
25 °C	65 °C	2.09 K/W
30 °C	65 °C	1.81 K/W
40 °C	65 °C	1.24 K/W
50 °C	65 °C	0.68 K/W

TALEX(module SPOT P320-3 EM, 1,050 mA

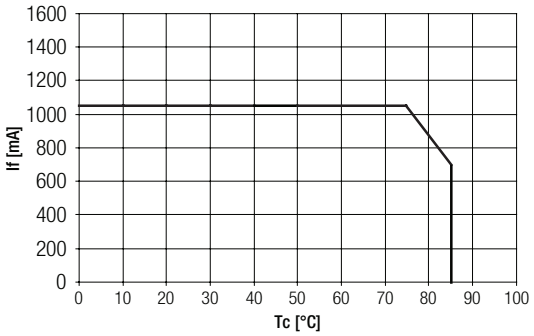
ta	tc	$R_{th, hs-a}$
25 °C	55 °C	0.96 K/W
30 °C	55 °C	0.77 K/W
40 °C	55 °C	0.40 K/W

Notes
The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between TALEX(module SPOT and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.

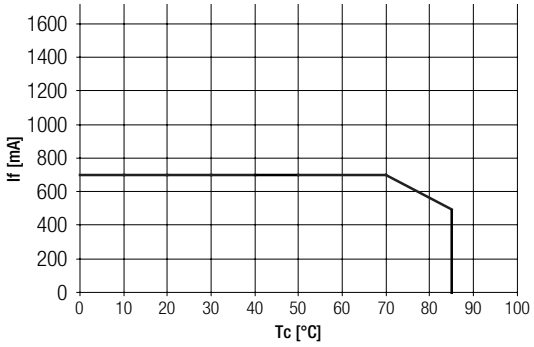
Thermal behaviour

storage temperature	-30 – 85 °C
operating temperature	-30 – 55 °C
tc max. (at typ. current)	85 °C

Normal operation Pin 1&2



Emergency operation Pin 3&4



Matrix temperature

f(soldering time) for the modules

Temperature	Max. time without heat sink	Max. time with optimized heat sink
330 °C	15 s	–
340 °C	12 s	–
350 °C	10 s	–
360 °C	5 s	15 s
370 °C	3 s	12 s
380 °C	2 s	10 s
390 °C	1 s	5 s

The values apply for soldering without heat sink. To reduce the duration of soldering it is recommended to pre-heat the module at ta max., e.g. on a plate.

Lifetime

tc temperature in °C	luminous flux in %	lifetime 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 converter

TALEXmodule SPOT 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 converter which complies with the relevant standards. The use of TALEX converters from Tridonic in combination with TALEXmodule SPOT guarantees the necessary protection for safe and reliable operation.

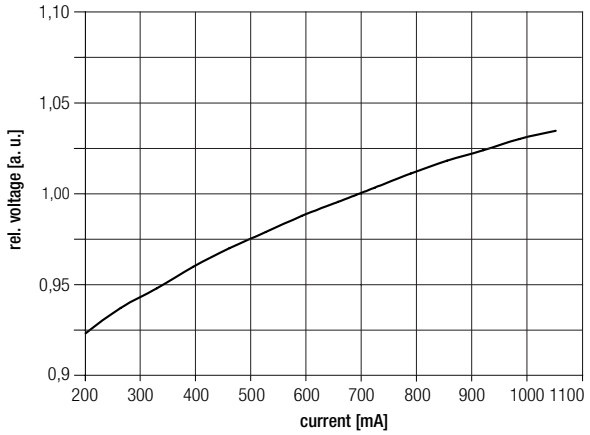
If a converter other than Tridonic TALEXconverter is used, it must provide the following protection:

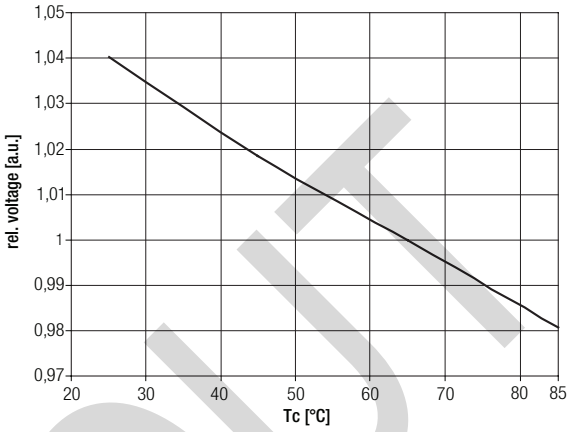
- Short-circuit protection
- Overload protection
- Overtemperature protection

TALEXmodule SPOT P320-3 EM must be supplied by a constant current converter.
Operation with a constant voltage converter will lead to an irreversible damage of the module.

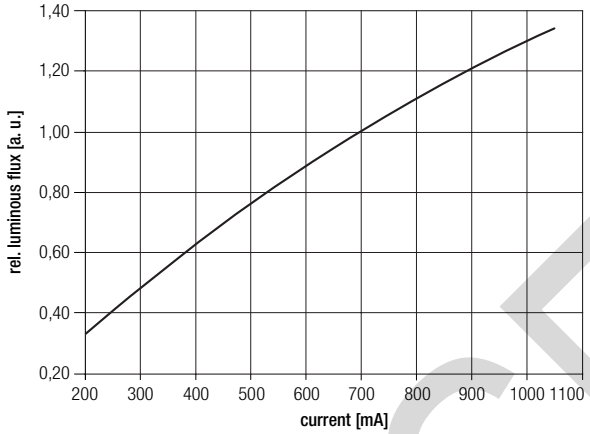
Wrong polarity can damage the TALEXmodule SPOT P320-3 EM.

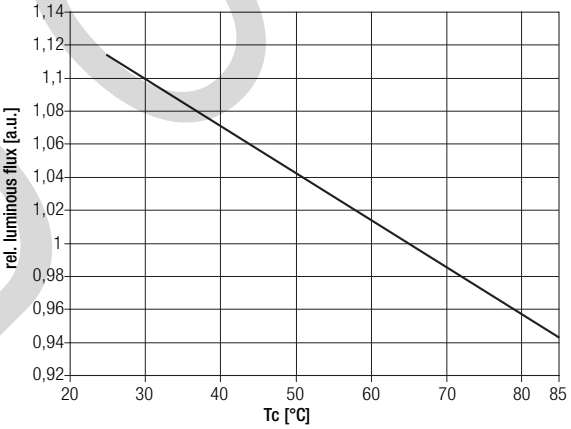
Relative forward voltage and relative luminous flux in normal operation





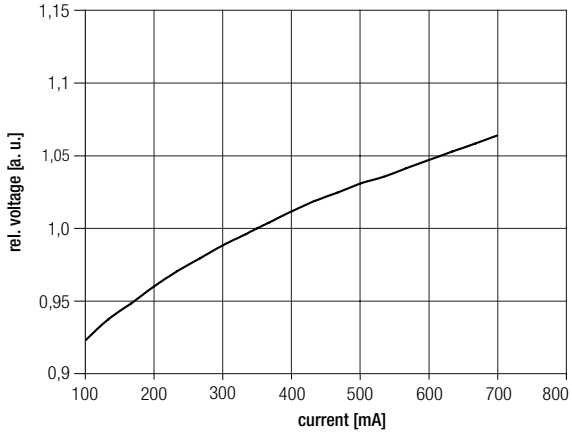
— Relative forward voltage at tc = 65 °C



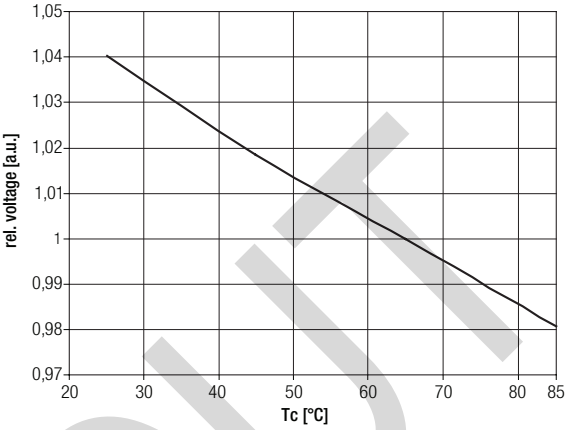


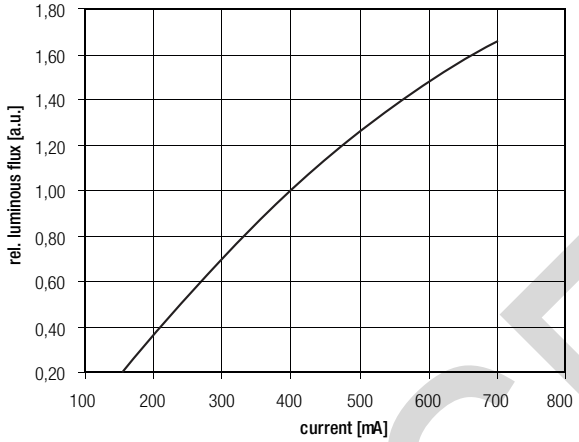
— Relative luminous flux at tc = 65 °C

Relative forward voltage and relative luminous flux in emergency operation

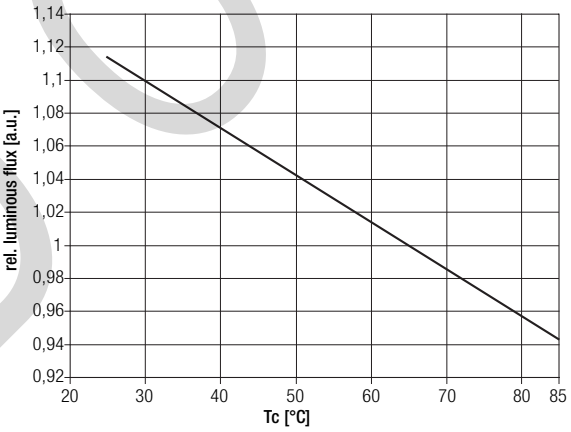


— Relative forward voltage at tc = 65 °C





— Relative luminous flux at tc = 65 °C

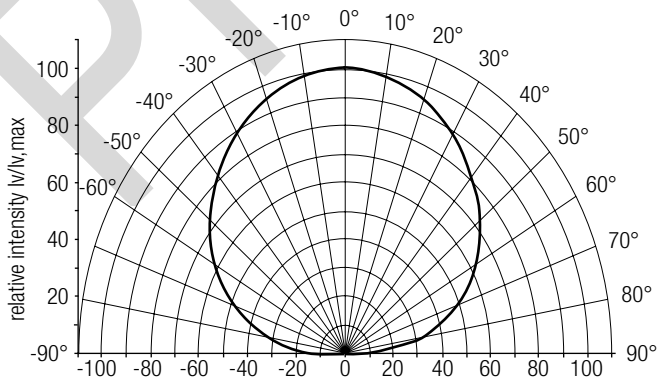


The diagrams based on statistic values.
The real values can be different.

Optical characteristics TALEX(module SPOT P320-3 EM

The optical design of the TALEX(module SPOT product line ensures optimum homogenity for the light distribution.

TALEX(module SPOT P320-3 EM 140°: Light distribution

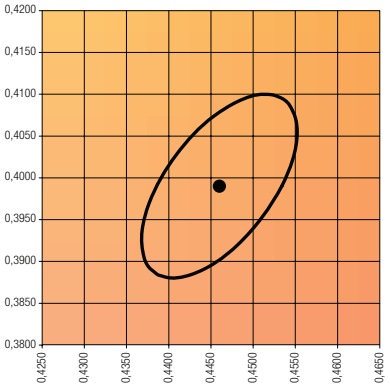


Coordinates and tolerances according to CIE 1964

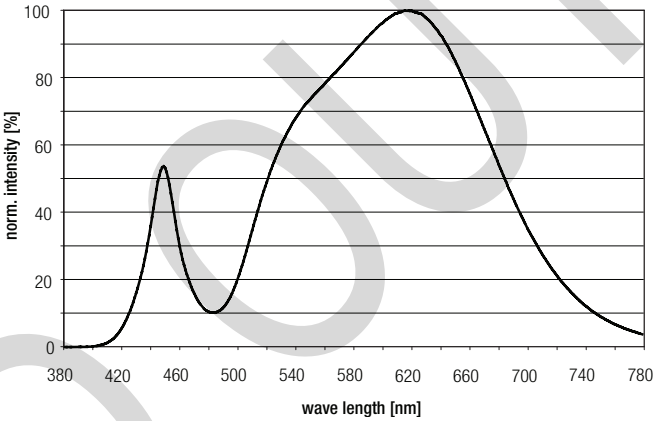
The specified colour coordinates are measured by a current impulse of 700 mA and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0,4460	0,3990

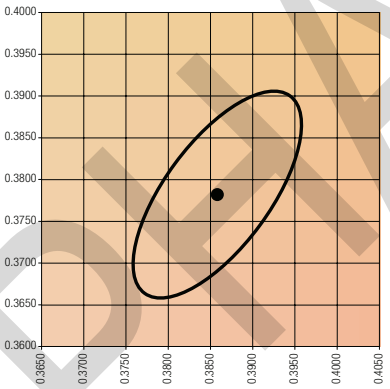


MacAdam ellipse: 4SDCM



4,000 K

	x0	y0
Centre	0,3860	0,3780



MacAdam ellipse: 4SDCM