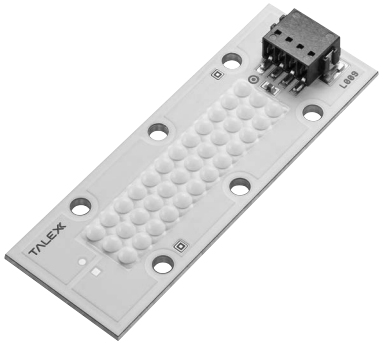
EAC RoHS

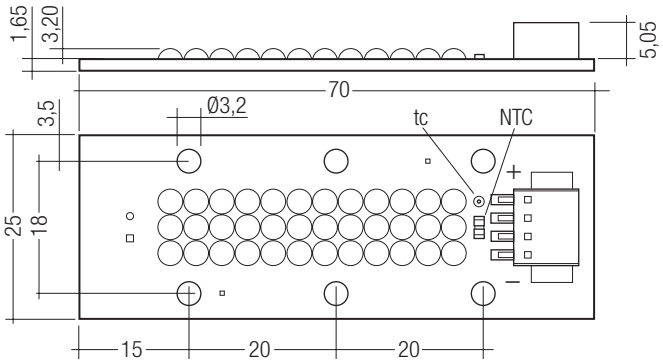
TALEXmodule RECTANGULAR P440-2

TALEXmodule EOS

Product description

- Street lighting
- High-flux LED module
- Narrow colour temperature tolerance band
- Compact design
- Excellent thermal management[3]
- NTC for temperature control
- High-power LED in chip-on-board technololgy
- Beam characteristic: 140°
- Uniform distribution of light
- Fixing holes for M3 screws
- Built-in LED module
- Cooling required





Technical data

Typ. power at 1,050 mA[1] [6]	40 W
Ambient temperature range	-30 ... +55 °C
tp rated	65 °C
tc[3]	85 °C
Max. DC forward current[2]	1,400 mA
Max. permissible LF current ripple	2,000 mA
Max. permissible peak current	3,000 mA / max. 10 ms
Risk group (EN 62471:2008)	0

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Standards, page 2

Colour temperatures and tolerances, page 5

Ordering data

Type	Article number	Colour temperature[4] [5]	Packaging carton	Weight per pc.
LED P440-2 3000K 70x25	**89601161**	3,000 K	20 pc(s).	0.008 kg
LED P440-2 4000K 70x25	**89601162**	4,000 K	20 pc(s).	0.008 kg
LED P440-2 5000K 70x25	**89601155**	5,000 K	20 pc(s).	0.008 kg

Specific technical data

Type	Photometric code	Min. Luminous flux at 1,050 mA[6] [7]	Typ. Luminous flux at 1,050 mA[6] [7]	Typ. Forward current[2] [8]	Max. Forward current[2] [8]	Min. Forward voltage[1] [6]	Typ. Forward voltage[1] [6]	Max. Forward voltage[1] [6]	Colour rendering index CRI[5]
LED P440-2 3000K 70x25	830/4x9	2,400 lm	2,700 lm	1,050 mA	1,400 mA	33.3 V	38 V	44.8 V	> 80
LED P440-2 4000K 70x25	840/4x9	2,700 lm	3,000 lm	1,050 mA	1,400 mA	33.3 V	38 V	44.8 V	> 80
LED P440-2 5000K 70x25	750/4x9	3,400 lm	3,800 lm	1,050 mA	1,400 mA	33.3 V	38 V	44.8 V	> 70

[1] Tolerance range for electrical data: ±15 %.

[2] Permitted current range see diagram on page 2.
Exceeding the maximum operating current leads to an overload of the TALEXmodule RECTANGULAR.
This may in turn result in a significant reduction of life-time or even in damage of the TALEXmodule RECTANGULAR.

[3] 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 TALEXmodule RECTANGULAR 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. For details please refer to page 2.

[4] Colour coordinates and tolerances according to CIE 1964. For details please refer to page 5.

[5] Colour temperature and CRI according to CIE 1931.

[6] At tp = 65 °C

[7] Tolerance range for optical data: ±15 %.

[8] Max. permissible surge current: 3 A, duration max. 10 µs

Alle Angaben für ta = 25 °C.

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	McAdam initial	McAdam after 25% of the life-time (max.6000h)	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 %

Energy classification

Type	Forward current	Energy classification
P440-2 3000K 70x25	1,050 mA	A
P440-2 4000K 70x25	1,050 mA	A
P440-2 5000K 70x25	1,050 mA	A+

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 RECTANGULAR will be greatly reduced or the TALEXmodule RECTANGULAR may be destroyed.

Therefore the TALEXmodule RECTANGULAR P440-2 needs to be mounted onto a heat sink.

Tridonic's excellent thermal design for the TALEXmodule RECTANGULAR products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

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

For TALEXmodule RECTANGULAR P440-2 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

TALEXmodule RECTANGULAR 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 plastic screws.

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 TALEXmodule RECTANGULAR (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

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

Temperature control
An NTC resistor is on the board of the TALEXmodule RECTANGULAR P440-2 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).

T	R_{25} = 220 kΩ, $B_{25/100}$ = 4,500 K	
	R_T/R_{25}	α
25 °C	1.0000	4.72 %/K
30 °C	0.7944	4.60 %/K
35 °C	0.6347	4.48 %/K
40 °C	0.5099	4.37 %/K
45 °C	0.4119	4.26 %/K
50 °C	0.3345	4.15 %/K
55 °C	0.2730	4.05 %/K
60 °C	0.2239	3.95 %/K
65 °C	0.1846	3.85 %/K
70 °C	0.1529	3.75 %/K
75 °C	0.1272	3.66 %/K
80 °C	0.1063	3.57 %/K
85 °C	0.08928	3.48 %/K

Typical heat sink surface

TALEXmodule RECTANGULAR P440-2, 1,050 mA

ta	tc	$R_{th,\ hs\text{-}a}$	typical heat sink surface
25 °C	65 °C	0.96 K/W	693 cm²
30 °C	65 °C	0.82 K/W	813 cm²
40 °C	65 °C	0.54 K/W	1,241 cm²
50 °C	65 °C	0.25 K/W	2,620 cm²

TALEXmodule RECTANGULAR P440-2, 1,400 mA

ta	tc	$R_{th,\ hs\text{-}a}$	typical heat sink surface
25 °C	65 °C	0.60 K/W	1,110 cm²
30 °C	65 °C	0.49 K/W	1,350 cm²
40 °C	65 °C	0.39 K/W	2,300 cm²
50 °C	65 °C	0.08 K/W	7,920 cm²

Notes

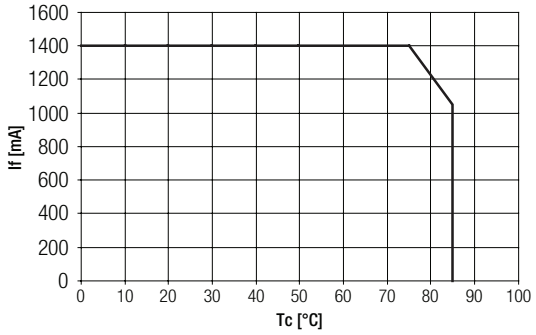
Values valid for: natural convection, heat sink material: aluminium ≥ 1 mm thick, $R_{th,\ hs\text{-}a}$ = required thermal resistance of heat sink

The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between TALEXmodule RECTANGULAR and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the TALEXmodule RECTANGULAR has to be fixed on the heat sink with M3 plastic screws to optimise the thermal connection.

Storage and humidity

storage temperature	-30 ... +80 °C

Operation only in non condensing environment.
Humidity during processing of the module should be between 30 to 70 %.



Electrical supply/choice of LED Driver

TALEXmodule RECTANGULAR 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 Driver which complies with the relevant standards. The use of TALEXconverter from Tridonic in combination with TALEXmodule RECTANGULAR guarantees the necessary protection for safe and reliable operation.

If a LED Driver other than Tridonic TALEXconverter is used, it must provide the following protection:
- Short-circuit protection
- Overload protection
- Overtemperature protection

TALEXmodule RECTANGULAR P440-2 must be supplied by a constant current LED Driver.
Operation with a constant voltage LED Driver will lead to an irreversible damage of the module.

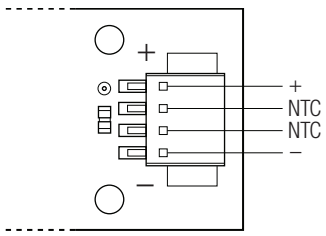
Wrong polarity can damage the TALEXspot P440-2 module.

Life-time

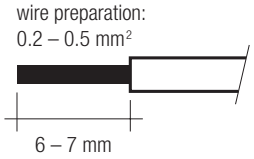
Life-time declarations are informative and represent no warranty claim.

tc temperature in °C	luminous flux in %	life-time in h
25	80	29,000
	70	47,000
	50	91,000
45	80	28,000
	70	45,000
	50	87,000
65	80	26,000
	70	42,000
	50	81,000
75	80	23,000
	70	35,000
	50	75,000
85	80	15,000
	70	22,000
	50	49,000

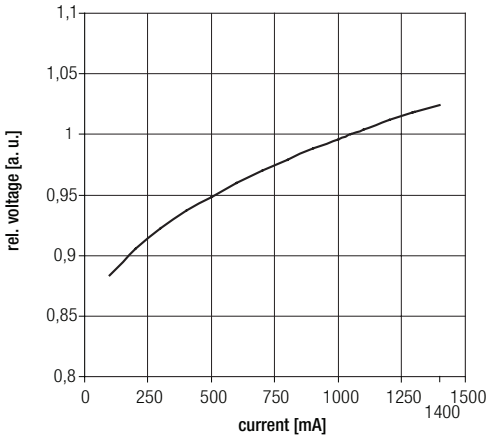
Plug connection

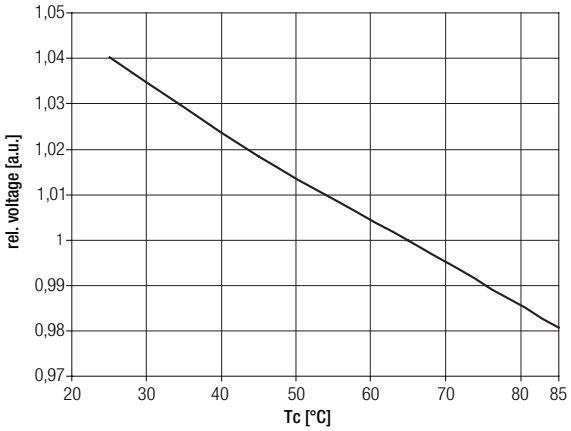


Type: PTSM 0,5/4-2,5-H SMD R44

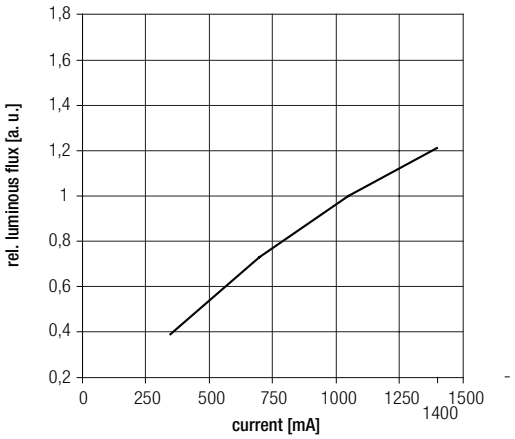


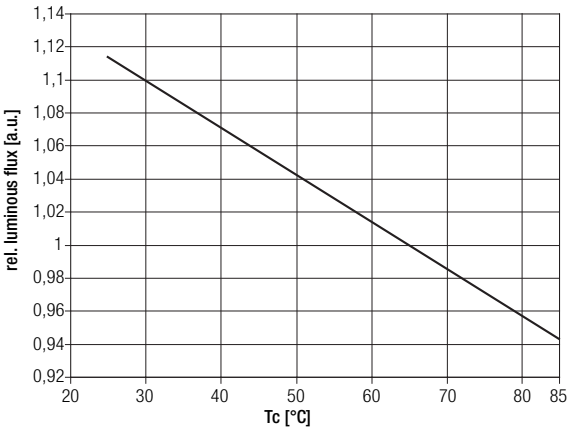
Relative forward voltage and relative luminous flux





— Relative forward voltage at tc = 65 °C





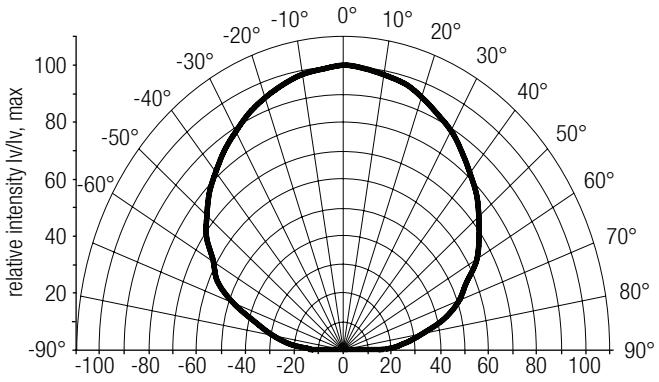
— Relative luminous flux at tc = 65 °C

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

Optical characteristics TALEXmodule RECTANGULAR P440-2

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

TALEXmodule RECTANGULAR P440-2 140°: Light distribution



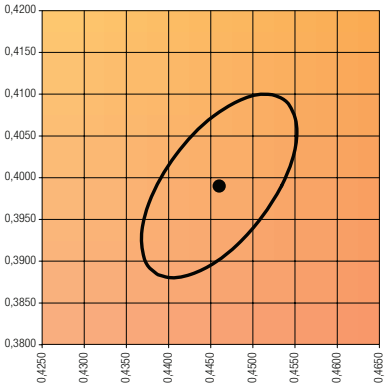
For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

Coordinates and tolerances according to CIE 1964

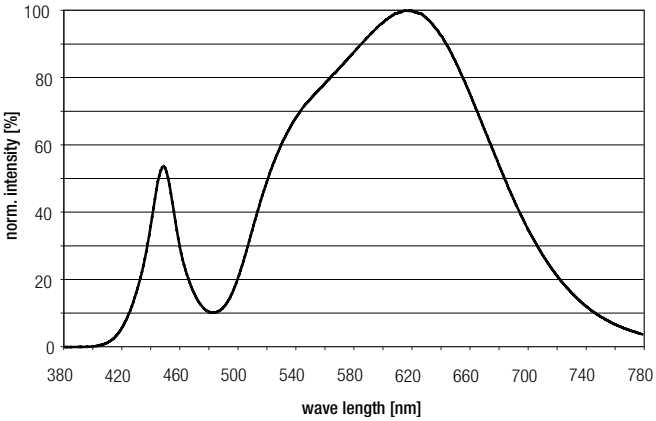
The specified colour coordinates are measured by a current impulse of 1,050 mA and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0,4460	0,3990

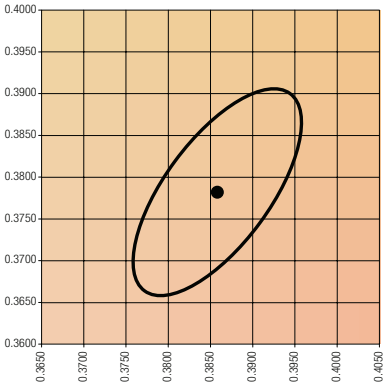


MacAdam ellipse: 4SDCM

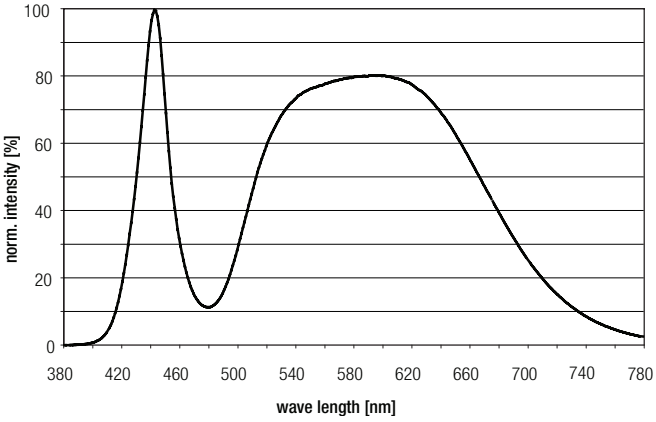


4,000 K

	x0	y0
Centre	0,3860	0,3780

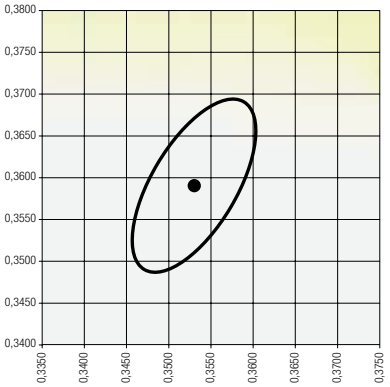


MacAdam ellipse: 4SDCM



5,000 K

	x0	y0
Centre	0,3530	0,3590



MacAdam ellipse: 4SDCM