TALEXengine DLE G2 integrated ADV

TALEXengine DLE

Product description

- Module with integrated electronics
- For downlights
- Light engine operating with 230 V AC
- Luminous flux range from 1,024 – 2,043 lm
- High system efficacy up to 92 lm/W at tp = 65 °C
- Nominal life-time up to 50,000 h (L70/B50)
- Small colour tolerance MacAdam 4
- Fixing holes for M3 screws
- Not dimmable
- Cooling required

Standards, page 4

Colour temperatures and tolerances, page 9

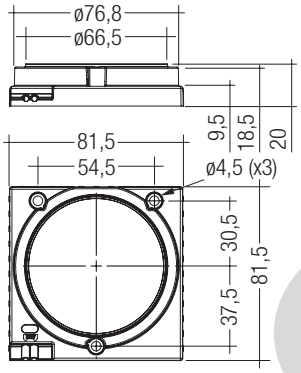
RoHS

TALEXengine DLE G2 integrated ADV

TALEXengine DLE

Technical data

Rated supply voltage	220 – 240 V
Input voltage range	198 – 264 V
Mains frequency	50 / 60 Hz
Typ. λ	0.93
THD	tbd
Beam characteristic	80°
Ambient temperature ta	-30 ... +45 °C
Typ. tp temperature ①	65 °C
Max. tc point temperature ①	85 °C
Risk group (EN 62471:2008)	0
Type of protection	IP00



Ordering data

Type	Article number	Colour temperature	Casing	Packaging	Weight per pc.
STARK-DLE-G2-LES65-1100-830-AC	28000486	3,000 K	yes	10 pc(s).	0.065 kg
STARK-DLE-G2-LES65-1100-840-AC	28000487	4,000 K	yes	10 pc(s).	0.065 kg
STARK-DLE-G2-LES65-2000-830-AC	28000488	3,000 K	yes	10 pc(s).	0.065 kg
STARK-DLE-G2-LES65-2000-840-AC	28000489	4,000 K	yes	10 pc(s).	0.065 kg

Specific technical data

Type	Photometric code	Luminous flux at tp = 25 °C②	Luminous flux at tp = 65 °C②	Input power③	Luminous efficacy system at tp = 65 °C	Colour rendering index CRI	Energy classification
STARK-DLE-G2-LES65-1100							
STARK-DLE-G2-LES65-1100-830-AC	830/46x	1,044 lm	1,024 lm	11.8 W	87 lm/W	80	A+
STARK-DLE-G2-LES65-1100-840-AC	840/46x	1,112 lm	1,090 lm	11.8 W	92 lm/W	80	A+
STARK-DLE-G2-LES65-2000							
STARK-DLE-G2-LES65-2000-830-AC	830/46x	1,919 lm	1,825 lm	22.0 W	83 lm/W	80	A
STARK-DLE-G2-LES65-2000-840-AC	840/46x	2,043 lm	1,943 lm	22.0 W	88 lm/W	80	A

① If the max. temperature limits are exceeded, the life of the system will be greatly reduced or the system may be damaged. The temperature of the TALEXengine at the tp-point is to be measured in the thermally stable state with a temperature sensor or or temperature-sensitive sticker as per EN 60598-1. For the precise position of the tp point see the drawing on page 4.

② Tolerance range for optical data: ±10 %.

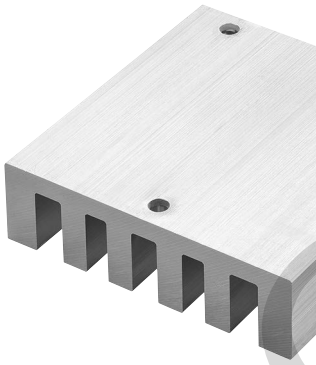
③ All values at tp = 65 °C.

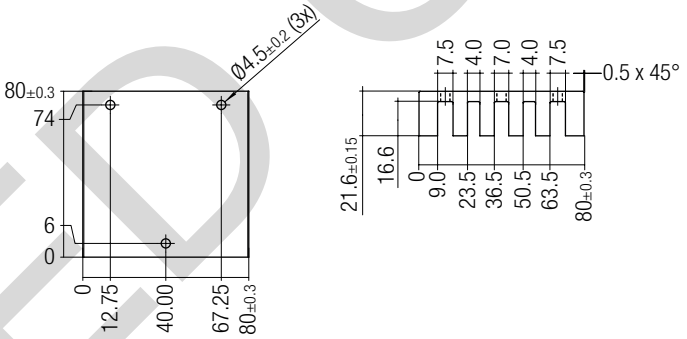
ACCES-SORIES

DLE GEN2 Adapter

Product description

- The adapter plate does not replace a heat sink





Ordering data

Type	Article number	Packaging	Weight per pc.
DLE GEN2 Adapter	**28000420**	1 pc(s).	0.250 kg

1. Standards

EN 62031
EN 62471
EN 61547
EN 55015
IEC 61000-4-2

1.1 Glow wire test

according to EN 62031 with increased temperature of 960 °C passed.

1.2 Photometric code

Key for photometric code, e. g. 830 / 469

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.6000h)	Luminous flux after 25% of the life-time (max.6000h)	
					Code	Luminous flux
7	67 – 76				7	≥ 70 %
8	77 – 86				8	≥ 80 %
9	87 – ≥90				9	≥ 90 %

1.3 Isolation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 V_{DC} for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal.
The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

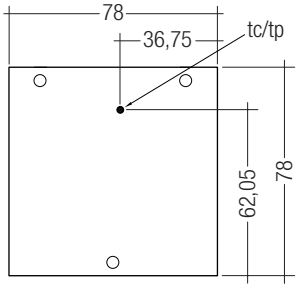
2. Thermal details

2.1 tp point, ambient temperature and life-time

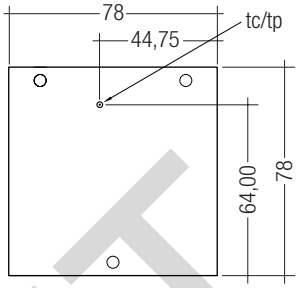
The temperature at tp reference point is crucial for the light output and life-time of a TALEX product.
The opeating temperature of a Talex product is crucial for the light output, the product life-time but also for the product safety.
The thermal limits can be checked at the tp/tc point and at tr.
On page 6 the lumen maintenance is shown in relation to the temperature at tp.
tp,rated shows the temperature at which the rated values are reached.
tc shows the thermal limit for safety reason und must never be exceeded under normal conditions.

For TALEXengine DLE G2 int ADV a tp 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 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.



DLE-G2-LES65-1100



DLE-G2-LES65-2000

2.2 Thermal behaviour

storage temperature	-40 ... +100 °C
operating temperature ta	-30 ... +65 °C
tp	65 °C
tc max.	85 °C
max. humidity*	30 ... 70 %

* not considered

2.3 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 TALEXengine DLE G2 int ADV will be greatly reduced or the TALEXengine DLE G2 int ADV may be destroyed.

Therefore the TALEXengine DLE G2 int ADV needs to be mounted onto a heat sink heat sink which does not exceed the value for $R_{th,max}$.

Tridonic's excellent thermal design for the TALEXengine DLE G2 int ADV products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

2.4 Heat sink values

TALEXengine STARK-DLE-G2-LES65-1100 AC

ta	tp	$R_{th, hs-a}$
25 °C	65 °C	4.88 K/W
35 °C	65 °C	3.66 K/W
45 °C	65 °C	2.44 K/W
55 °C	65 °C	1.22 K/W

TALEXengine STARK-DLE-G2-LES65-2000 AC

ta	tp	$R_{th, hs-a}$
25 °C	65 °C	2.57 K/W
35 °C	65 °C	1.93 K/W
45 °C	65 °C	1.28 K/W
55 °C	65 °C	0.64 K/W

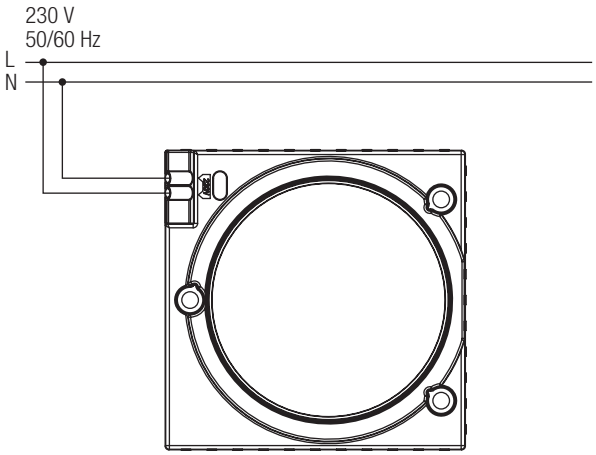
Notes
The actual cooling can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between TALEXengine DLE G2 int ADV and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the TALEXengine DLE G2 int ADV has to be fixed on the heat sink with M3 screws to optimise the thermal connection.
Use of thermal interface material with thermal conductivity of l > 1 W/mK and layer thickness of interface material with max. 50 µm or a similar interface material where the quotient of layer thickness and thermal conductivity b < 50 µmmK/W.

3. Installation / wiring

3.1 Electrical supply/choice of LED control gear

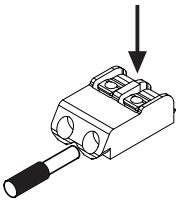
TALEXengine DLE G2 int ADV from Tridonic are protected against mains transients up to 1kV. The TALEXengine DLE G2 int ADV has to be operated with 230 V AC.

3.2 Wiring



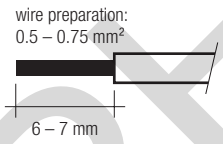
3.3 Release of the wiring

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



3.4 Wiring type and cross section

The wiring can be solid or stranded wires with a cross section of 0.5 to 0.75 mm².
For the push-wire connection you have to strip the insulation (6–7 mm).
Loosen wire through twisting and pulling.



3.5 Mounting instruction

In case TALEXengine DLE G2 int ADV modules are mounted into a protection class I luminaire, heat sink and lamp housing must be earthed.
In case TALEXengine DLE G2 int ADV modules are mounted into a protection class II luminaire, the LED module and all conductive parts in electric connection (like heat sink, etc.) must be untouchable.

TALEXengine DLE G2 int ADV 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.
The fixing/cooling surface must be cleaned before installing the TALEXengines to remove all dirt, dust and grease.

None of the components of the TALEXengine DLE G2 int ADV (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing with M3 screws: 0.5 Nm.
Max. torque for fixing with M4 screws: 1.2 Nm.
Don’t use countersunk screw.

The 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.

3.6 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

4. Life-time

4.1 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 maintenace 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 inital luminous flux, respectivly 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.

4.2 Lumen maintenance

tp temperature	L80 / F10	L80 / F50	L70 / F10	L70 / F50
65 °C	19,000 h	33,000 h	28,000 h	50,000 h

5. Electrical values

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20
Installation Ø	1.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²	1.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²
STARK-DLE-G2-LES65-1100-8x0-AC	150	200	250	310	150	200	250	310
STARK-DLE-G2-LES65-2000-8x0-AC	75	105	130	165	75	105	130	165

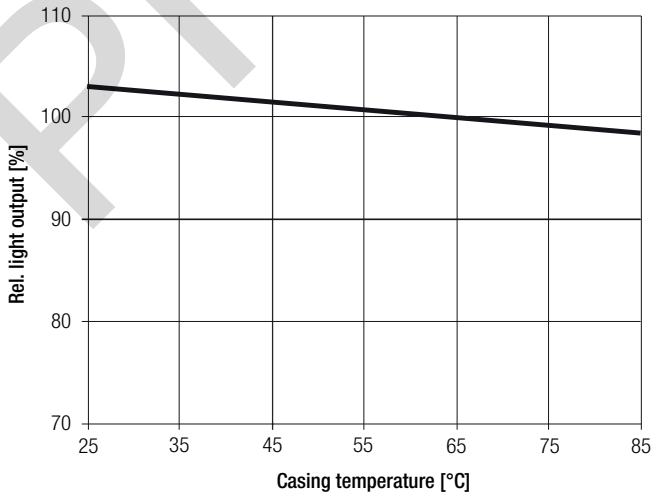
No considerable inrush current, therefore the amount of devices per circuit breaker is restricted by max. input current.

5.2 Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

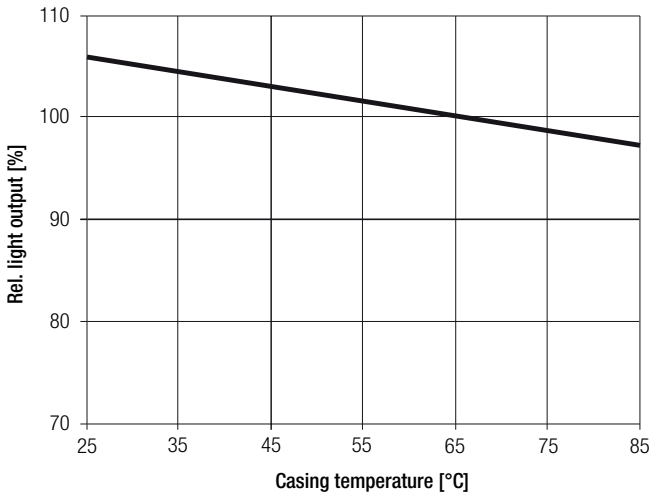
	THD	3.	5.	7.	9.	11.
STARK-DLE-G2-LES65-1100-8x0-AC	< 11	1	11	8	7	3
STARK-DLE-G2-LES65-2000-8x0-AC	< 14	14	2	2	3	3

5.3 Typ. light output vs. tc temperature

STARK-DLE-G2-LES65-1100-8x0-AC

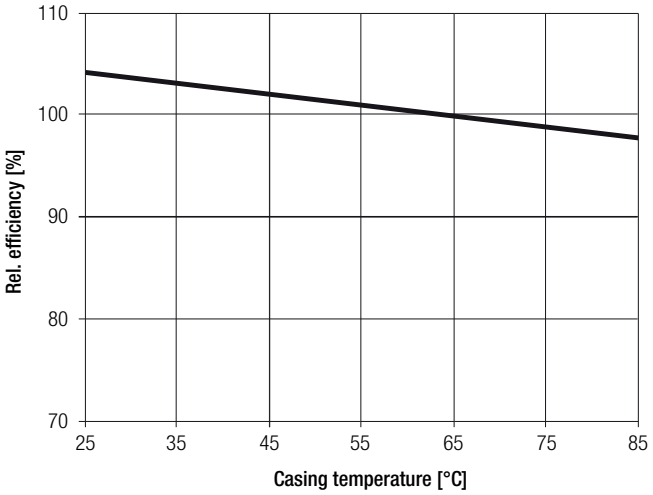


STARK-DLE-G2-LES65-2000-8x0-AC

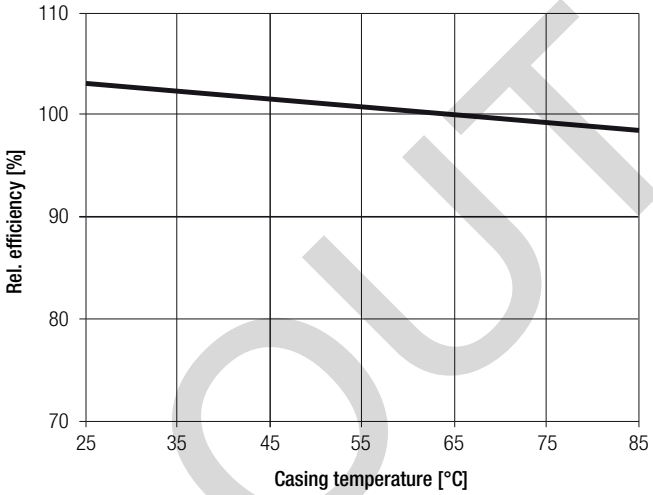


5.3 Typ. efficiency vs. tc temperature

STARK-DLE-G2-LES65-1100-8x0-AC

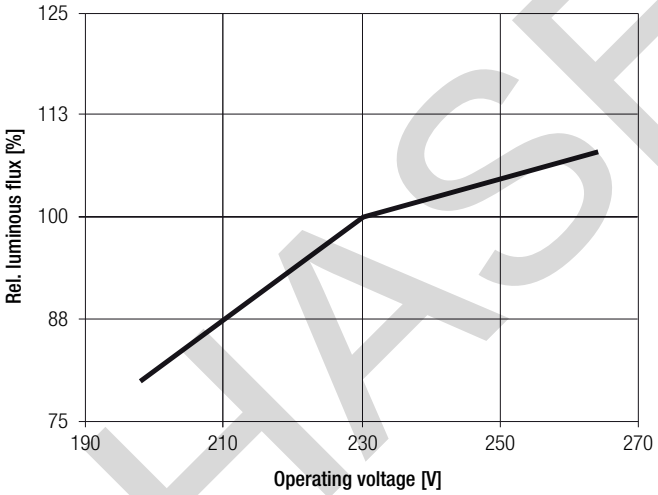


STARK-DLE-G2-LES65-2000-8x0-AC

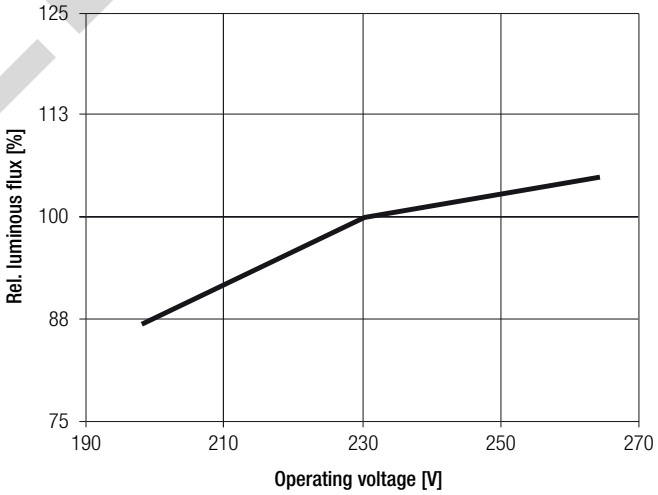


5.5 Typ. light output vs. operating voltage

STARK-DLE-G2-LES65-1100-8x0-AC

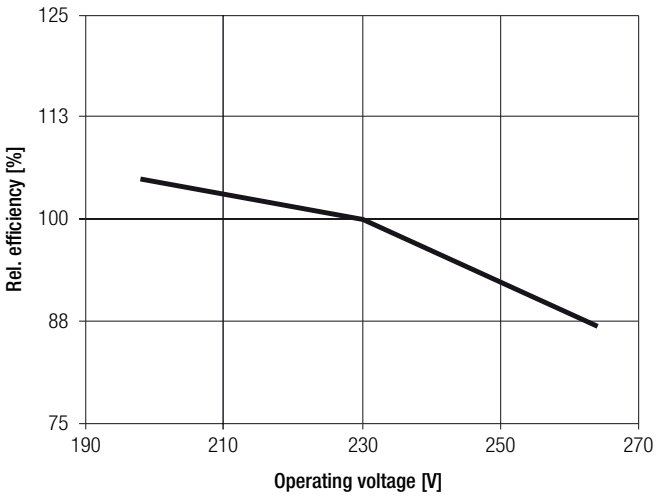


STARK-DLE-G2-LES65-2000-8x0-AC

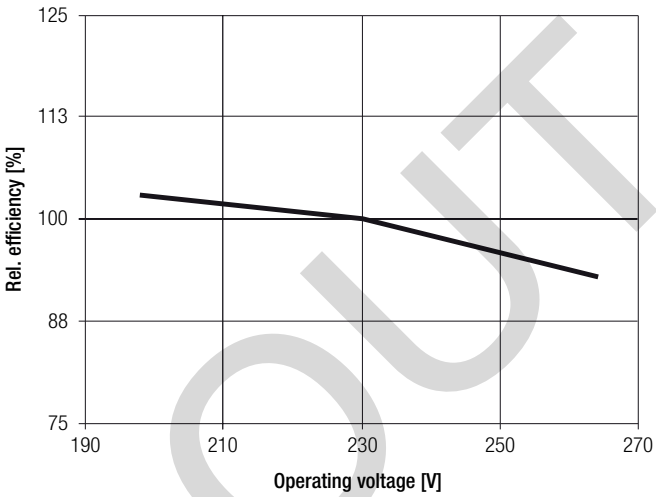


5.6 Typ. efficiency vs. operating voltage

STARK-DLE-G2-LES65-1100-8x0-AC

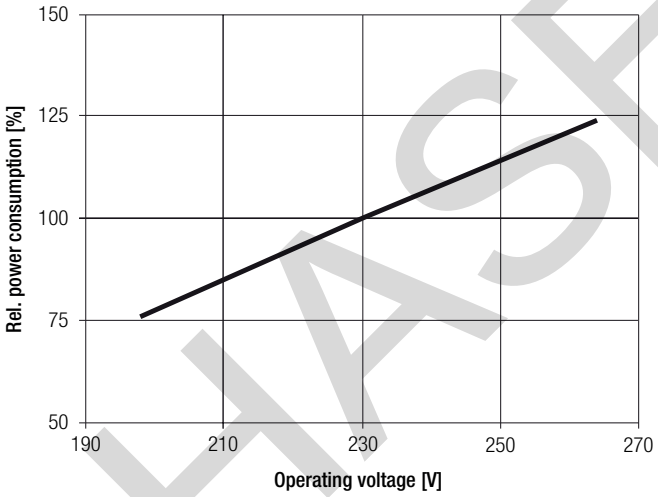


STARK-DLE-G2-LES65-2000-8x0-AC

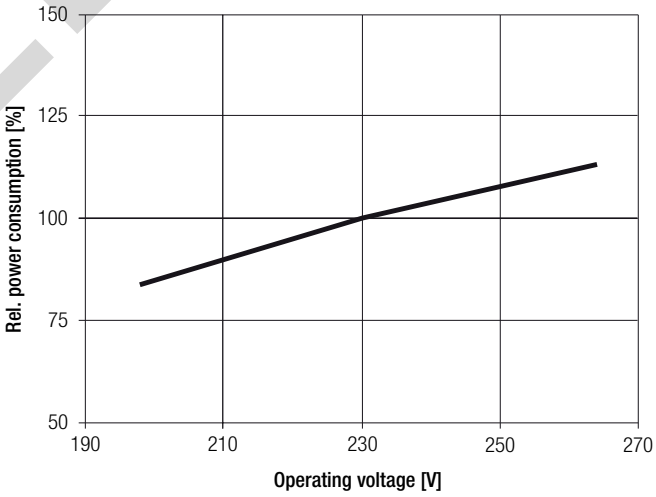


5.7 Power consumption vs. operating voltage

STARK-DLE-G2-LES65-1100-8x0-AC



STARK-DLE-G2-LES65-2000-8x0-AC



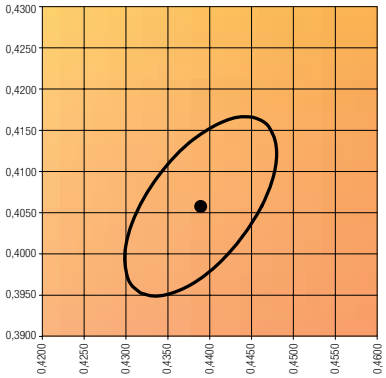
6. Photometric charcteristics

6.1 Coordinates and tolerances according to CIE 1931

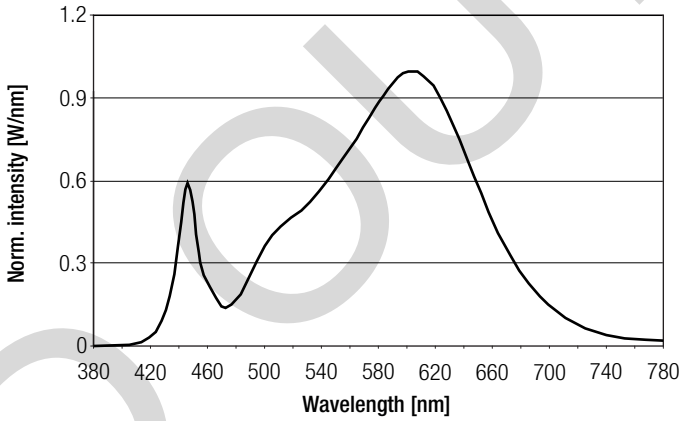
The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4383	0.4057

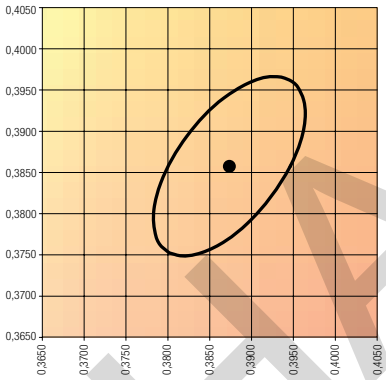


MacAdam ellipse: 4SDCM

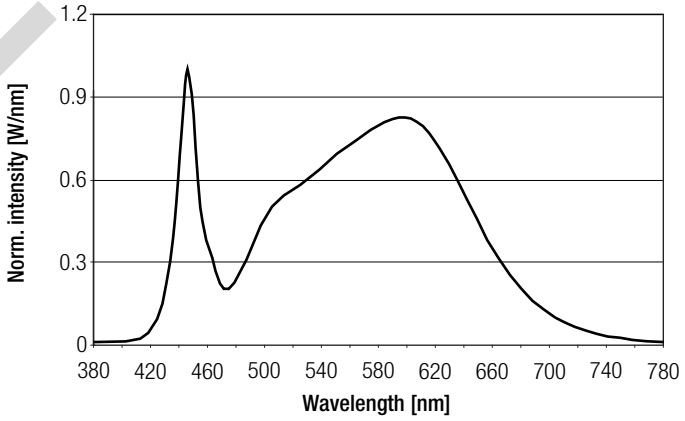


4,000 K

	x0	y0
Centre	0.3873	0.3851



MacAdam ellipse: 4SDCM



6.2 Light distribution