

**Module LLE 55mm 2000lm LV ADV5**

Modules LLE advanced



LLE 55x280mm 2000lm LV ADV5



LLE 55x566mm 4000lm LV ADV5



For articles manufactured at Tridonic SRB d.o.o.

**Product description**

- \_ Ideal for linear and panel lights
- \_ Perfectly uniform light, even if several LED modules are used together in a line
- \_ Push terminals for quick and simple wiring of LED module to LED module
- \_ HE ... High Efficiency, NM ... Nominal Mode, HO ... High Output
- \_ Long lifetime up to 72,000 hours
- \_ 5 years guarantee (conditions at <https://www.tridonic.com/manufacturer-guarantee-conditions>)

**Optical properties**

- \_ Colour temperature 3,000, 3,500, 4,000, 5,000 and 6,500 K
- \_ Useful luminous flux 4,350 lm at Irated and tp = 25 °C
- \_ Efficacy of the LED module 195 lm/W at Irated and tp = 25 °C
- \_ High colour rendering index CRI > 80
- \_ High colour consistency (MacAdam 3) <sup>①</sup>
- \_ Small luminous flux tolerances

**Mechanical properties**

- \_ Module dimension 55 x 280 mm and 55 x 566 mm
- \_ Simple installation (e.g. screws)

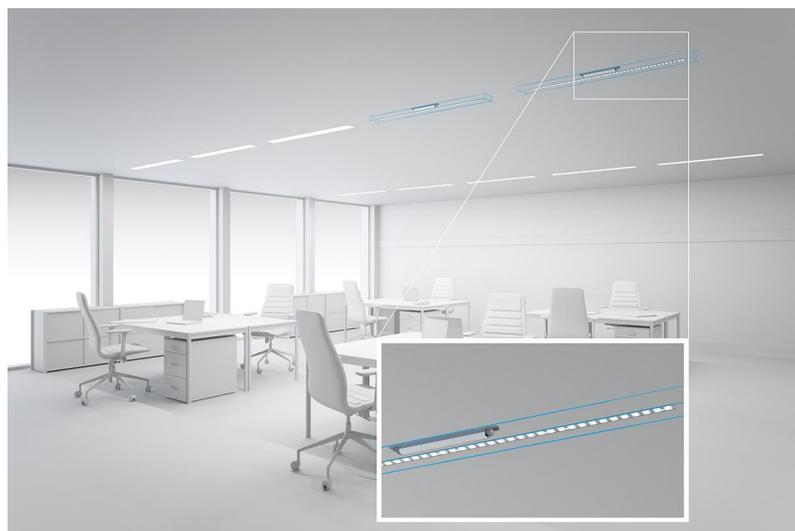
**System solution**

- \_ Combine Tridonic's LED modules and dimmable drivers to achieve an outstanding system efficacy (configuration possible via <https://setbuilder.tridonic.com/>)

<sup>①</sup> Integral measurement over the complete module.

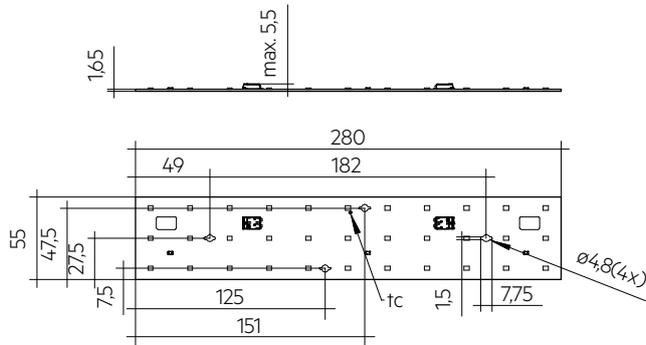
**Website**

<http://www.tridonic.com/89603417>

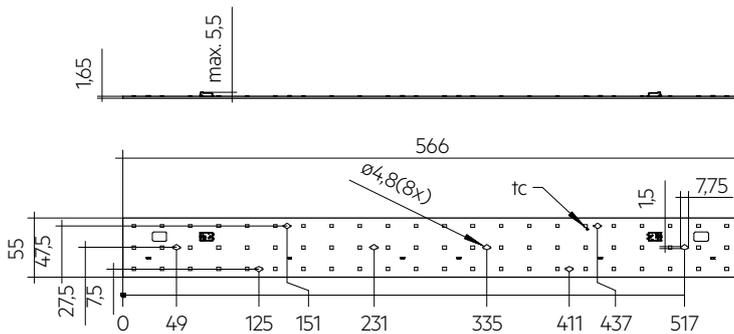


**Module LLE 55mm 2000lm LV ADV5**

Modules LLE advanced



LLE 55x280mm 2000lm LV ADV5



LLE 55x566mm 4000lm LV ADV5

**Ordering data**

Type	Article number	Article status	Colour temperature	Packaging, carton	Weight per pc.
LLE 55x280mm 2000lm 830 LV ADV5	89603417	Standard	3,000 K	128 pc(s).	0.049 kg
LLE 55x280mm 2000lm 835 LV ADV5	89603418	On demand	3,500 K	128 pc(s).	0.049 kg
LLE 55x280mm 2000lm 840 LV ADV5	89603419	Standard	4,000 K	128 pc(s).	0.049 kg
LLE 55x280mm 2000lm 850 LV ADV5	89603420	Standard	5,000 K	128 pc(s).	0.049 kg
LLE 55x280mm 2000lm 865 LV ADV5	89603421	On demand	6,500 K	128 pc(s).	0.049 kg
LLE 55x566mm 4000lm 830 LV ADV5	89603422	On demand	3,000 K	96 pc(s).	0.099 kg
LLE 55x566mm 4000lm 835 LV ADV5	89603423	On demand	3,500 K	96 pc(s).	0.099 kg
LLE 55x566mm 4000lm 840 LV ADV5	89603424	Standard	4,000 K	96 pc(s).	0.099 kg
LLE 55x566mm 4000lm 850 LV ADV5	89603425	Standard	5,000 K	96 pc(s).	0.099 kg
LLE 55x566mm 4000lm 865 LV ADV5	89603426	On demand	6,500 K	96 pc(s).	0.099 kg

**Technical data**

Beam characteristic	120°
Ambient temperature $t_a$	-40 ... +65 °C
$t_p$ rated	50 °C
$t_c$	95 °C
Irated for 2,000 lm	375 mA
Irated for 4,000 lm	750 mA
I <sub>max</sub> for 2,000 lm	540 mA
I <sub>max</sub> for 4,000 lm	1,080 mA
Max. permissible LF current ripple for 2,000 lm	595 mA
Max. permissible LF current ripple for 4,000 lm	1,190 mA
Max. permissible peak current for 2,000 lm	900 mA / max. 8 ms
Max. zul. Stoßstrom für 4.000 lm	1,800 mA / max. 8 ms
Max. working voltage for insulation <sup>®</sup>	450 V
Insulation test voltage	1.9 kV
CTI of the printed circuit board	≥ 600
Colour tolerance	3 SDCM
ESD classification	Severity level 4
Risk group (IEC 62471) for 2,000lm at ≤ 470 mA	RG0
Risk group (IEC 62471) for 2,000lm at I <sub>max</sub>	RG1
Risk group (IEC 62471) for 4,000lm at ≤ 940 mA	RG0
Risk group (IEC 62471) for 4,000lm at I <sub>max</sub>	RG1
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	72,000 h
Guarantee (conditions at <a href="http://www.tridonic.com">www.tridonic.com</a> )	5 Year(s)

**Approval marks****Standards**

IEC 62031, IEC 62471, IEC 61000-4-2, IEC 62778, IEC 61547

## Specific technical data

Type	Article number	Photometric code	Useful luminous flux at tp = 25 °C	Expected luminous flux at tp rated	Typ. forward current	Min. forward voltage at tp rated	Max. forward voltage at tp = 25 °C	Power consumption Pon at tp = 25 °C	Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Colour rendering index CRI
<b>Operating mode HE at 200 mA per feet (280 mm module length)</b>											
LLE 55x280mm 2000lm 830 LV ADV5	89603417	830/359	-	1,141 lm	200 mA	28.1 V	31.2 V	-	-	192 lm/W	> >80
LLE 55x280mm 2000lm 835 LV ADV5	89603418	835/359	-	1,153 lm	200 mA	28.1 V	31.2 V	-	-	195 lm/W	> >80
LLE 55x280mm 2000lm 840 LV ADV5	89603419	840/359	-	1,212 lm	200 mA	28.1 V	31.2 V	-	-	202 lm/W	> >80
LLE 55x280mm 2000lm 850 LV ADV5	89603420	850/359	-	1,228 lm	200 mA	28.1 V	31.2 V	-	-	207 lm/W	> >80
LLE 55x280mm 2000lm 865 LV ADV5	89603421	865/359	-	1,182 lm	200 mA	28.1 V	31.2 V	-	-	200 lm/W	> >80
LLE 55x566mm 4000lm 830 LV ADV5	89603422	830/359	-	2,286 lm	400 mA	28.1 V	31.2 V	-	-	192 lm/W	> >80
LLE 55x566mm 4000lm 835 LV ADV5	89603423	835/359	-	2,309 lm	400 mA	28.1 V	31.2 V	-	-	194 lm/W	> >80
LLE 55x566mm 4000lm 840 LV ADV5	89603424	840/359	-	2,378 lm	400 mA	28.1 V	31.2 V	-	-	200 lm/W	> >80
LLE 55x566mm 4000lm 850 LV ADV5	89603425	850/359	-	2,377 lm	400 mA	28.1 V	31.2 V	-	-	198 lm/W	> >80
LLE 55x566mm 4000lm 865 LV ADV5	89603426	865/359	-	2,380 lm	400 mA	28.1 V	31.2 V	-	-	200 lm/W	> >80
<b>Operating mode NM at 375 mA per feet (280 mm module length)</b>											
LLE 55x280mm 2000lm 830 LV ADV5	89603417	830/359	2,091 lm	2,041 lm	375 mA	29.0 V	32.2 V	11.6 W	180 lm/W	177 lm/W	> >80
LLE 55x280mm 2000lm 835 LV ADV5	89603418	835/359	2,111 lm	2,060 lm	375 mA	29.0 V	32.2 V	11.6 W	182 lm/W	179 lm/W	> >80
LLE 55x280mm 2000lm 840 LV ADV5	89603419	840/359	2,204 lm	2,144 lm	375 mA	29.0 V	32.2 V	11.6 W	190 lm/W	186 lm/W	> >80
LLE 55x280mm 2000lm 850 LV ADV5	89603420	850/359	2,257 lm	2,187 lm	375 mA	29.0 V	32.2 V	11.6 W	195 lm/W	191 lm/W	> >80
LLE 55x280mm 2000lm 865 LV ADV5	89603421	865/359	2,175 lm	2,114 lm	375 mA	29.0 V	32.2 V	11.6 W	188 lm/W	184 lm/W	> >80
LLE 55x566mm 4000lm 830 LV ADV5	89603422	830/359	4,182 lm	4,069 lm	750 mA	29.0 V	32.2 V	23.2 W	180 lm/W	177 lm/W	> >80
LLE 55x566mm 4000lm 835 LV ADV5	89603423	835/359	4,223 lm	4,111 lm	750 mA	29.0 V	32.2 V	23.2 W	182 lm/W	179 lm/W	> >80
LLE 55x566mm 4000lm 840 LV ADV5	89603424	840/359	4,360 lm	4,251 lm	750 mA	29.0 V	32.2 V	23.2 W	188 lm/W	184 lm/W	> >80
LLE 55x566mm 4000lm 850 LV ADV5	89603425	850/359	4,330 lm	4,224 lm	750 mA	29.0 V	32.2 V	23.2 W	187 lm/W	183 lm/W	> >80
LLE 55x566mm 4000lm 865 LV ADV5	89603426	865/359	4,350 lm	4,239 lm	750 mA	29.0 V	32.2 V	23.2 W	188 lm/W	184 lm/W	> >80
<b>Operating mode HO at 500 mA per feet (280 mm module length)</b>											
LLE 55x280mm 2000lm 830 LV ADV5	89603417	830/359	-	2,661 lm	500 mA	29.6 V	32.7 V	-	-	170 lm/W	> >80
LLE 55x280mm 2000lm 835 LV ADV5	89603418	835/359	-	2,683 lm	500 mA	29.6 V	32.7 V	-	-	172 lm/W	> >80
LLE 55x280mm 2000lm 840 LV ADV5	89603419	840/359	-	2,795 lm	500 mA	29.6 V	32.7 V	-	-	178 lm/W	> >80
LLE 55x280mm 2000lm 850 LV ADV5	89603420	850/359	-	2,846 lm	500 mA	29.6 V	32.7 V	-	-	182 lm/W	> >80
LLE 55x280mm 2000lm 865 LV ADV5	89603421	865/359	-	2,746 lm	500 mA	29.6 V	32.7 V	-	-	176 lm/W	> >80
LLE 55x566mm 4000lm 830 LV ADV5	89603422	830/359	-	5,299 lm	1,000 mA	29.6 V	32.7 V	-	-	169 lm/W	> >80
LLE 55x566mm 4000lm 835 LV ADV5	89603423	835/359	-	5,352 lm	1,000 mA	29.6 V	32.7 V	-	-	171 lm/W	> >80
LLE 55x566mm 4000lm 840 LV ADV5	89603424	840/359	-	5,519 lm	1,000 mA	29.6 V	32.7 V	-	-	176 lm/W	> >80
LLE 55x566mm 4000lm 850 LV ADV5	89603425	850/359	-	5,494 lm	1,000 mA	29.6 V	32.7 V	-	-	174 lm/W	> >80
LLE 55x566mm 4000lm 865 LV ADV5	89603426	865/359	-	5,515 lm	1,000 mA	29.6 V	32.7 V	-	-	176 lm/W	> >80

② If mounted with M4 screws and plastic washers.

③ Tolerance of useful light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %.

④ Tolerance of expected light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %. Based on calculation.

⑤ Tolerance of power consumption Pon ± 10 %. Measurement uncertainty ± 5 %.

## ACL LENS 55x280mm

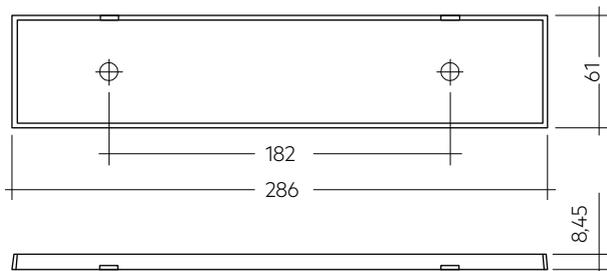
Accessory

**Product description**

- \_ ACL LENS for LLE 55x280mm
- \_ Available with different beam characteristics
- \_ For SELV applications only
- \_ Easy mounting with M4 screws
- \_ ACL SHADE to reduce UGR
- \_ ACL LENS made of PMMA, ACL SHADE made of ABS
- \_ Max. permissible temperature 80 °C
- \_ Photometric data available on website

**Website**

<http://www.tridonic.com/28002206>

**Ordering data**

Type	Article number	Length L	Beam characteristic	Efficiency	Packaging, carton	Weight per pc.
ACL LENS 55X280mm 60°	28002206	286.00 mm	60°	91 %	72 pc(s).	0.088 kg
ACL LENS 55X280mm 90°	28002207	286.00 mm	90°	90 %	72 pc(s).	0.092 kg
ACL LENS 55X280mm 90x45°	28002208	286.00 mm	90x45°	90 %	72 pc(s).	0.091 kg
ACL LENS 55X280mm DA25°	28002209	286.00 mm	double asymmetric 25°	94 %	60 pc(s).	0.072 kg
ACL LENS 55X280mm A20°	28002210	286.00 mm	asymmetric 20°	93 %	60 pc(s).	0.058 kg
ACL SHADE 55X280mm UGR	28002211	290.58 mm	UGR improving	-	60 pc(s).	0.027 kg

## ACL CLIP 4.3mm

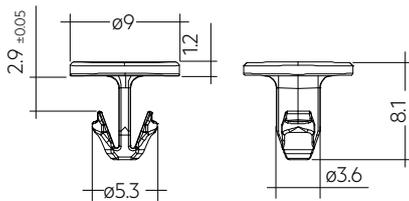
Accessory

**Product description**

- \_ Clip for fixation of LED modules with 4.3 mm holes
- \_ Fast snap on mounting (sheet thickness 0.5 – 1.0 mm for PUSH-FIX and 1 – 2 mm for PUSH-FIX Long)
- \_ For drilling hole 4 mm
- \_ Clip made of polycarbonate
- \_ Minimum sales quantity 500 pcs.

**Website**

<http://www.tridonic.com/28001036>

**Ordering data**

Type	Article number	Colour	Packaging, bag <sup>①</sup>	Weight per pc.
ACL CLIP 4.3mm PUSH-FIX	28001036	White	500 pc(s).	0.001 kg
ACL CLIP 4,3mm PUSH-FIX Long	28002314	Transparent	500 pc(s).	0.001 kg

① Minimum sales quantity 500 pcs.

## 1. Standards

IEC 62031  
IEC 62471  
IEC 61000-4-2  
IEC 62778  
IEC 61547

### 1.1 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	Colour temperature in Kelvin x 100	MacAdam initial	MacAdam after 25% of the lifetime (max.6000h)	Luminous flux after 25% of the lifetime (max.6000h)	
7	70 – 79				Code	Luminous flux
8	80 – 89				7	≥ 70 %
9	≥90				8	≥ 80 %
					9	≥ 90 %

### 1.2 Energy classification

Type	Colour temperature	Forward current	Energy classification	Energy consumption
LLE 55x280mm 2000lm 830 LV ADV5	3,000 K	375 mA	C	12 kWh / 1,000 h
LLE 55x280mm 2000lm 835 LV ADV5	3,500 K	375 mA	C	12 kWh / 1,000 h
LLE 55x280mm 2000lm 840 LV ADV5	4,000 K	375 mA	C	12 kWh / 1,000 h
LLE 55x280mm 2000lm 850 LV ADV5	5,000 K	375 mA	C	12 kWh / 1,000 h
LLE 55x280mm 2000lm 865 LV ADV5	6,500 K	375 mA	C	12 kWh / 1,000 h
LLE 55x566mm 4000lm 830 LV ADV5	3,000 K	750 mA	C	24 kWh / 1,000 h
LLE 55x566mm 4000lm 835 LV ADV5	3,500 K	750 mA	C	24 kWh / 1,000 h
LLE 55x566mm 4000lm 840 LV ADV5	4,000 K	750 mA	C	24 kWh / 1,000 h
LLE 55x566mm 4000lm 850 LV ADV5	5,000 K	750 mA	C	24 kWh / 1,000 h
LLE 55x566mm 4000lm 865 LV ADV5	6,500 K	750 mA	C	24 kWh / 1,000 h

Energy label and further information at [www.tridonic.com](http://www.tridonic.com) in the certificates tab of the corresponding product page and at the EPREL data base <https://eprel.ec.europa.eu/>

## 2. Thermal details

### 2.1 tc point, ambient temperature and lifetime

The temperature at tp reference point is crucial for the light output and lifetime of a LED product.

For LLE a tp temperature of 50 °C has to be complied in order to achieve an optimum between heat sink requirements, light output and lifetime.

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.

The tc and tp temperature of LED modules from Tridonic are measured at the same reference point.

### 2.2 Storage and humidity

Storage temperature	-40...+85 °C
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Operation only in non condensing environment.  
Humidity during processing of the module should be between 30 to 70 %.

## 2.3 Heat sink values

### LLE 55x280mm 2000lm ADV5

ta	tp	Forward current	R <sub>th, hs-a</sub>	Cooling area
25 °C	50 °C	375 mA	4.26 K/W	156 cm <sup>2</sup>
25 °C	50 °C	500 mA	2.99 K/W	223 cm <sup>2</sup>
35 °C	50 °C	375 mA	2.56 K/W	261 cm <sup>2</sup>
35 °C	50 °C	500 mA	1.79 K/W	372 cm <sup>2</sup>
40 °C	50 °C	375 mA	1.70 K/W	391 cm <sup>2</sup>
40 °C	50 °C	500 mA	1.19 K/W	558 cm <sup>2</sup>
45 °C	50 °C	375 mA	0.85 K/W	784 cm <sup>2</sup>
45 °C	50 °C	500 mA	0.60 K/W	1,120 cm <sup>2</sup>

### LLE 55x560mm 4000lm ADV5

ta	tp	Forward current	R <sub>th, hs-a</sub>	Cooling area
25 °C	50 °C	750 mA	2.15 K/W	309 cm <sup>2</sup>
25 °C	50 °C	1,000 mA	1.51 K/W	441 cm <sup>2</sup>
35 °C	50 °C	750 mA	1.29 K/W	516 cm <sup>2</sup>
35 °C	50 °C	1,000 mA	0.91 K/W	735 cm <sup>2</sup>
40 °C	50 °C	750 mA	0.86 K/W	774 cm <sup>2</sup>
40 °C	50 °C	1,000 mA	0.60 K/W	1,103 cm <sup>2</sup>
45 °C	50 °C	750 mA	0.43 K/W	1,551 cm <sup>2</sup>
45 °C	50 °C	1,000 mA	0.30 K/W	2,211 cm <sup>2</sup>

### Notes

The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation. Depending on the heat sink a heat conducting paste or heat conducting film might be necessary to keep the specified tp temperature.

### 3. Installation / wiring

#### 3.1 Electrical supply/choice of LED driver

LLE modules 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 LED driver from Tridonic in combination with LLE modules guarantees the necessary protection for safe and reliable operation.

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

- Short-circuit protection
- Overload protection
- Overtemperature protection



LLE modules 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 LLE.

With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness.

If a wire breaks or a complete module fails then the current passing through the other module increases. This may reduce its life considerably.

The max. permissible output current of the LED driver for parallel wiring is 3 A.

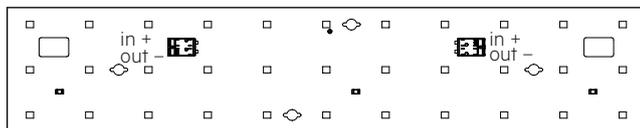
LLE can be operated either from SELV LED drivers or from LED drivers with LV output voltage.



LLE are basic insulated up to 450 V (if mounted with M4 screws with head diameter 7 mm in combination with plastic washers) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED driver (also against earth) is above 450 V, an additional insulation between LED module and heat sink is required (for example by insulated thermal pads) or by a suitable luminaire construction.

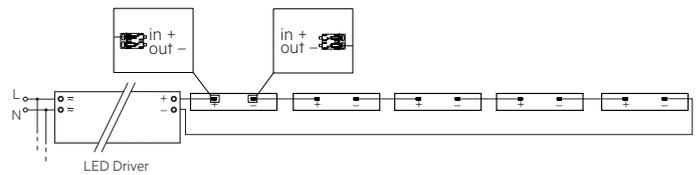
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

#### 3.2 Wiring



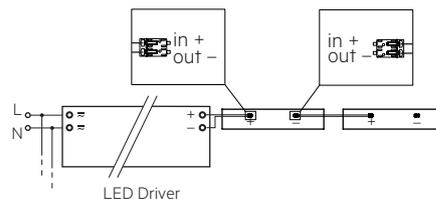
#### Wiring examples

Serial wiring:



Only with modules with the same length possible.

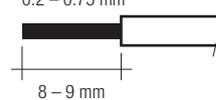
Parallel wiring:



#### 3.3 Wiring type and cross section

For wiring use stranded wire with ferrules or solid wire from 0.2 to 0.75 mm<sup>2</sup>. For the push-wire connection you have to strip the insulation (8–9 mm).

wire preparation:  
0.2 – 0.75 mm<sup>2</sup>



To remove the wires use a suitable tool (e.g. Microcon release pin) or through twist and pull.

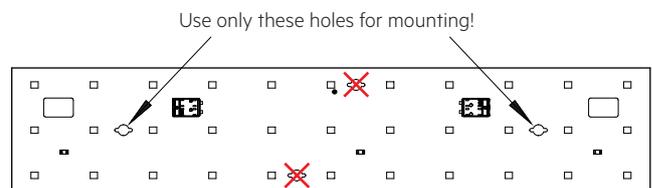
#### 3.4 Mounting instruction



None of the components of the LLE (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 onto a heat sink with min. 2 screws per module or ACL CLIP 4.3mm.



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.

### 3.5 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. Lifetime

### 4.1 Lifetime, lumen maintenance and failure rate

The light output of an LED module decreases over the lifetime, 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 lifetime 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.

### 4.2 Lumen maintenance for LLE 55mm LV ADV5

Forward current	tp tempera- ture	tp					
		L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
150 mA	40 °C	43,000 h	59,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	42,000 h	57,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	41,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	40,000 h	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	39,000 h	52,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	38,000 h	50,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	38,000 h	49,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	37,000 h	47,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	80 °C	36,000 h	46,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	85 °C	35,000 h	45,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	200 mA	40 °C	43,000 h	58,000 h	>72,000 h	>72,000 h	>72,000 h
45 °C		42,000 h	57,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
50 °C		41,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
55 °C		40,000 h	53,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
60 °C		39,000 h	51,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
65 °C		38,000 h	50,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
70 °C		37,000 h	48,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
75 °C		36,000 h	47,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
80 °C		36,000 h	45,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
85 °C		35,000 h	44,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
300 mA		40 °C	42,000 h	58,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	41,000 h	56,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	40,000 h	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	40,000 h	52,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	39,000 h	51,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	38,000 h	49,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	37,000 h	48,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	36,000 h	46,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	80 °C	35,000 h	45,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	85 °C	34,000 h	44,000 h	70,000 h	>72,000 h	>72,000 h	>72,000 h

Forward current	tp tempera- ture	tp					
		L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
375 mA	40 °C	42,000 h	57,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	41,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	40,000 h	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	39,000 h	52,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	38,000 h	50,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	37,000 h	49,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	37,000 h	47,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	36,000 h	46,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	80 °C	35,000 h	44,000 h	71,000 h	>72,000 h	>72,000 h	>72,000 h
	85 °C	34,000 h	43,000 h	69,000 h	>72,000 h	>72,000 h	>72,000 h
	450 mA	40 °C	42,000 h	56,000 h	>72,000 h	>72,000 h	>72,000 h
45 °C		41,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
50 °C		40,000 h	53,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
55 °C		39,000 h	51,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
60 °C		38,000 h	50,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
65 °C		37,000 h	48,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
70 °C		36,000 h	47,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
75 °C		35,000 h	45,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
80 °C		35,000 h	44,000 h	70,000 h	>72,000 h	>72,000 h	>72,000 h
85 °C		34,000 h	43,000 h	69,000 h	>72,000 h	>72,000 h	>72,000 h
500 mA		40 °C	41,000 h	56,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	40,000 h	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	39,000 h	52,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	38,000 h	51,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	38,000 h	49,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	37,000 h	48,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	36,000 h	46,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	35,000 h	45,000 h	71,000 h	>72,000 h	>72,000 h	>72,000 h
	80 °C	34,000 h	43,000 h	70,000 h	>72,000 h	>72,000 h	>72,000 h
	85 °C	34,000 h	42,000 h	68,000 h	>72,000 h	>72,000 h	>72,000 h

### 4.3 Switching capability

100,000 cycles

Tridonic test according to IEC 62717 Cl 10.3.3  
30 s on / 30 s off at I<sub>max</sub>

## 5. Electrical values

### 5.1 Declaration of electrical parameters

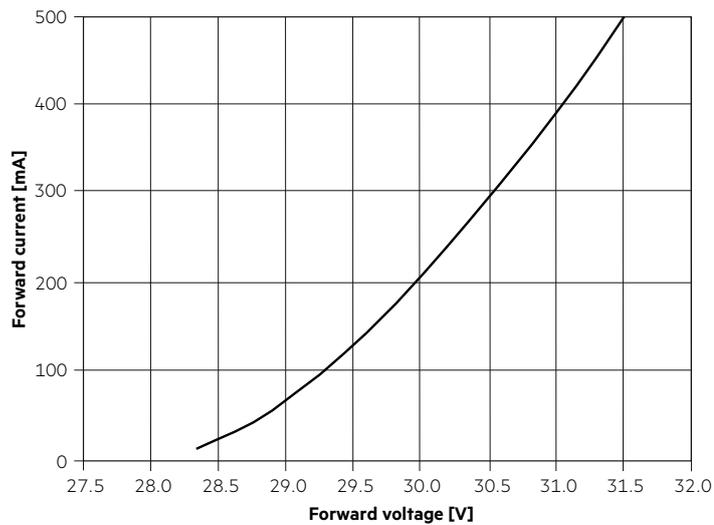
Irated ... Nominal operating current the module is designed for.

I<sub>max</sub> ... Max. permissible continuous operating current incl. The tolerances of the LED driver.

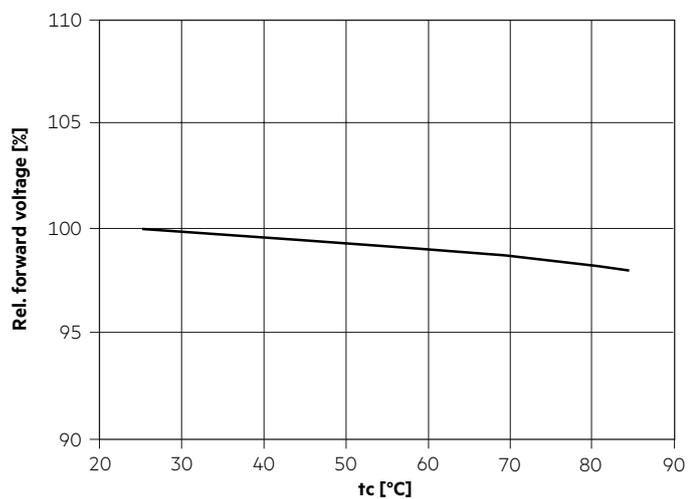
Max. permissible LF current ripple ... Max. output current of the LED driver incl. Tolerances and LF current ripple must not exceed this value.

Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

### 5.2 Typ. forward voltage vs. forward current



### 5.3 Forward voltage vs. tc temperature



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

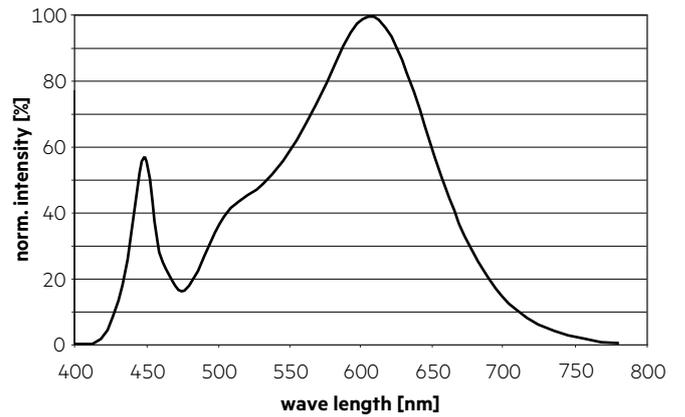
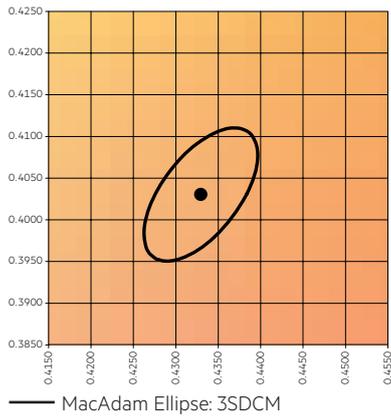
## 6. Photometric characteristics

### 6.1 Coordinates and tolerances according to CIE 1931

The specified colour coordinates are integral measured by current impulse of 195 mA 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  $\pm 0.01$ .

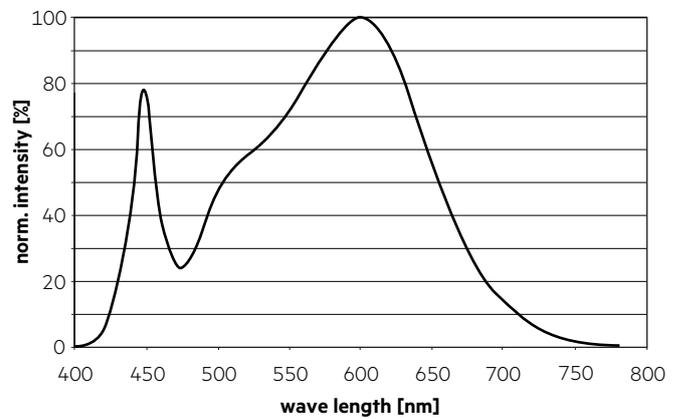
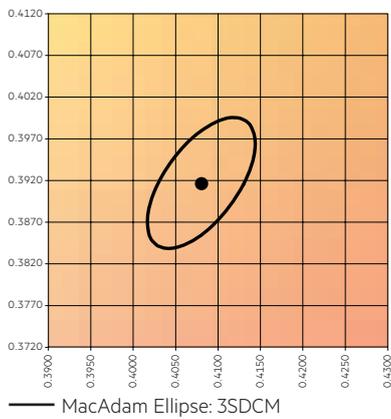
#### 3,000 K

	x0	y0
Centre	0.4338	0.4030



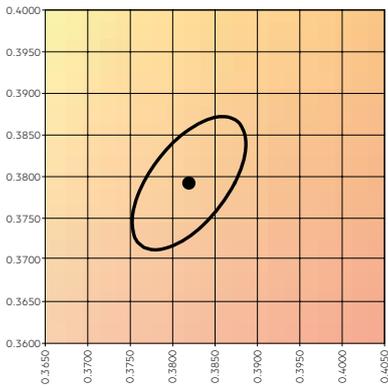
#### 3,500 K

	x0	y0
Centre	0.4073	0.3917

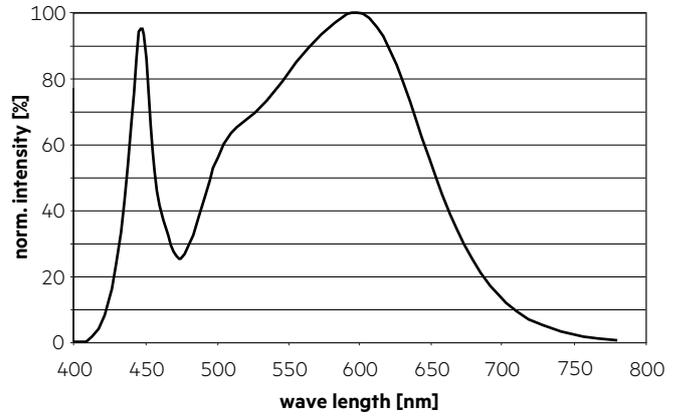


**4,000 K**

	x0	y0
Center	0.3818	0.3797

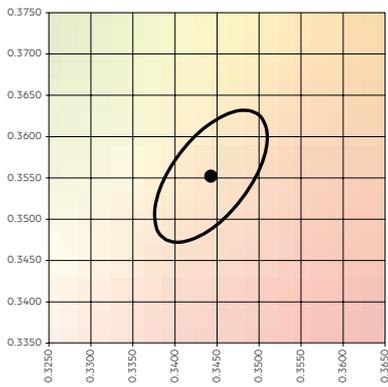


— MacAdam Ellipse: 3SDCM

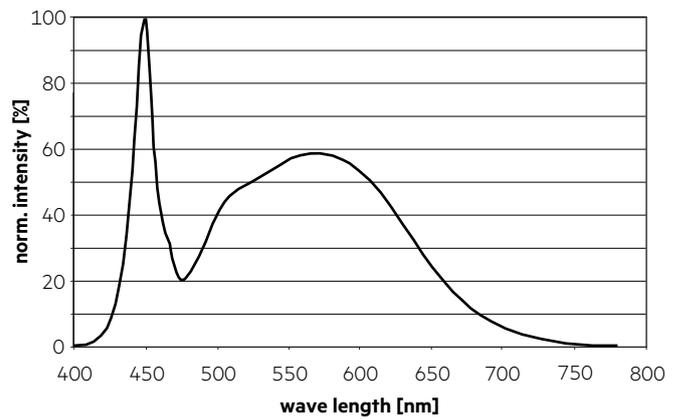


**5,000 K**

	x0	y0
Center	0.3447	0.3553

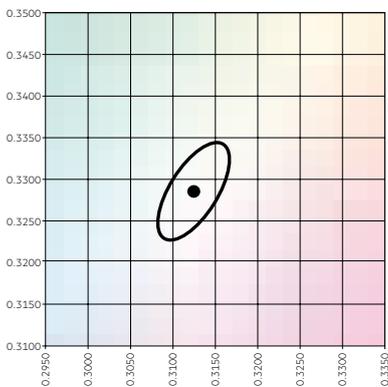


— MacAdam Ellipse: 3SDCM

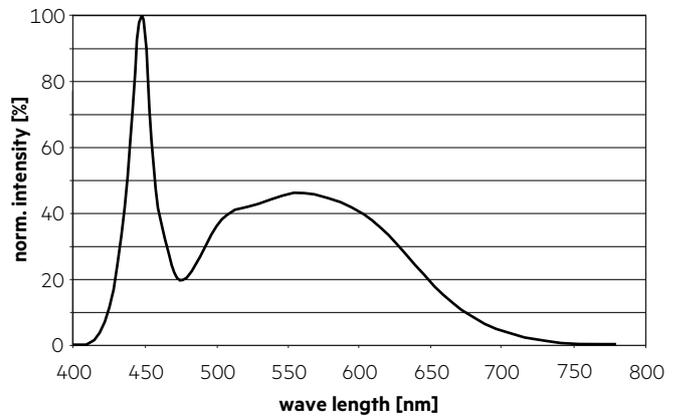


**6,500 K**

	x0	y0
Center	0.3123	0.3282

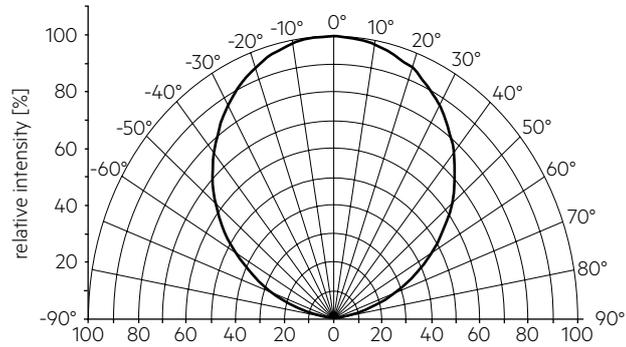


— MacAdam Ellipse: 3SDCM



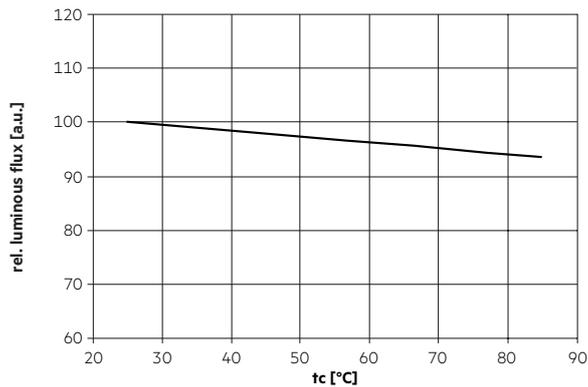
### 6.2 Light distribution

The optical design of the LLE product line ensures optimum homogeneity for the light distribution.



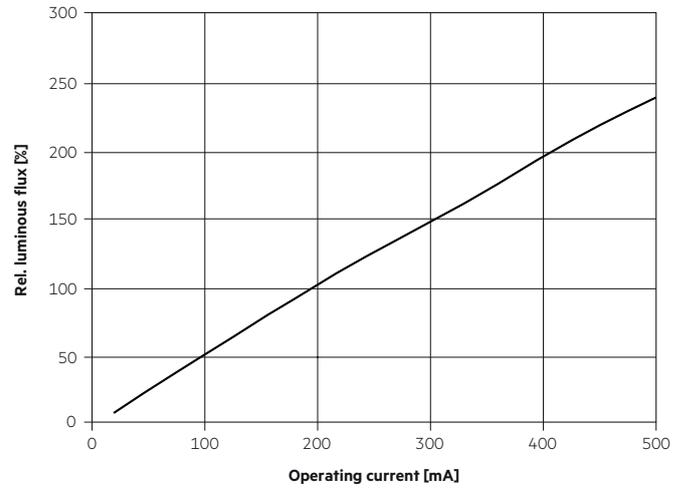
The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 5. To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 4 cm) should be used.

### 6.3 Relative luminous flux vs. tc temperature

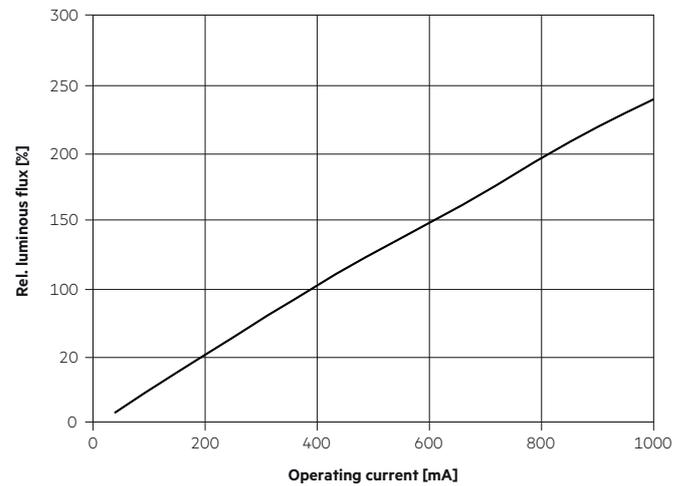


### 6.4 Relative luminous flux vs. operating current

LLE 55x280mm 2000lm LV ADV5



LLE 55x566mm 4000lm LV ADV5



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

## 7. Miscellaneous

### 7.1 Additional information

Additional technical information at [www.tridonic.com](http://www.tridonic.com) → Technical Data

Guarantee conditions at [www.tridonic.com](http://www.tridonic.com) → Services

Lifetime declarations are informative and represent no warranty claim.