



Module LLE FLEX 8mm ADV3

Modules LLE FLEX advanced

Product description

- Dimmable 24 V constant voltage LED flextape (SELV)
- Ideal for various decorative lighting applications: facade accent lighting, ceiling integration, cove lighting and for aluminium extrusions
- Long lifetime: 72,000 hours
- 5 years guarantee (conditions at www.tridonic.com)

Optical properties

- Colour temperature 2,700, 3,000, 4,000 and 6,500 K with SDCM 3[®]
- Useful luminous flux 2,440 lm/m at $t_p = 25\text{ °C}$
- Efficacy of the LED module 162 lm/W at $t_p = 25\text{ °C}$
- Small colour tolerance (MacAdam 3)

Mechanical properties

- High design freedom due to 10 cm cut-options
- Self-adhesive 3M tape at the backside for simple mounting on different surfaces
- reel2reel – No solder joints on the tape, easy to separate and low length tolerances[®]

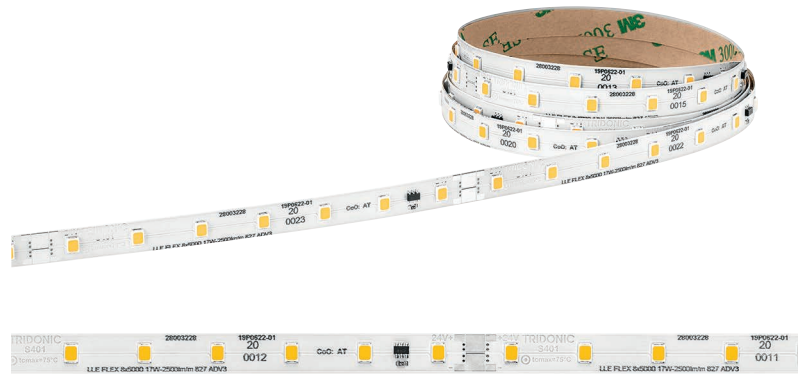
System solution

- System solution in combination with Tridonic constant voltage LED driver (fixed output and dimmable)



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Colour temperatures and tolerances, page 9



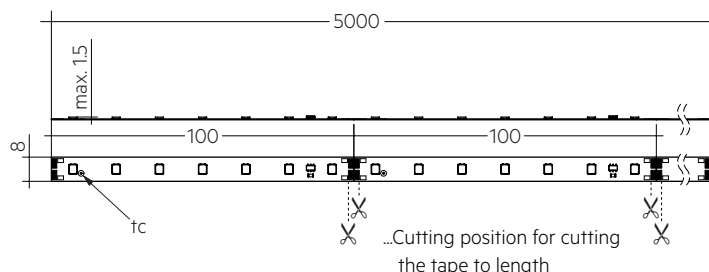


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Technical data

Beam characteristic	120°
Ambient temperature range	-35 ... +50 °C
tp rated	65 °C
tc	75 °C
DC supply voltage	24 V
DC supply voltage range [®]	21.5 – 26.4 V
Insulation test voltage	0.5 kV
ESD classification	severity level 1
Risk group (IEC 62471) for 600 lm/m	RGO
Risk group (IEC 62471) for 1,200 lm/m	RGO
Risk group (IEC 62471) for 1,800 lm/m	RGO
Risk group (IEC 62471) for 2,500 lm/m	RG1
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	72,000 h
Guarantee (conditions at www.tridonic.com)	5 years



Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
LLE FLEX 8x5000 4W-600lm/m 827 ADV3	28003216	2,700 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 4W-600lm/m 830 ADV3	28003217	3,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 4W-600lm/m 840 ADV3	28003218	4,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 4W-600lm/m 865 ADV3	28003219	6,500 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 7W-1200lm/m 827 ADV3	28003220	2,700 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 7W-1200lm/m 830 ADV3	28003221	3,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 7W-1200lm/m 840 ADV3	28003222	4,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 7W-1200lm/m 865 ADV3	28003223	6,500 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 11W-1800lm/m 827 ADV3	28003224	2,700 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 11W-1800lm/m 830 ADV3	28003225	3,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 11W-1800lm/m 840 ADV3	28003226	4,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 11W-1800lm/m 865 ADV3	28003227	6,500 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 16W-2500lm/m 827 ADV3	28003228	2,700 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 16W-2500lm/m 830 ADV3	28003229	3,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 16W-2500lm/m 840 ADV3	28003230	4,000 K	10 pc(s).	0.056 kg
LLE FLEX 8x5000 16W-2500lm/m 865 ADV3	28003231	6,500 K	10 pc(s).	0.056 kg

Specific technical data

Type	Photometric code	Useful luminous flux at tp = 25 °C [®]	Expected luminous flux at tp rated [®]	Typ. current consumption at tp rated	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 at tp = 25 °C
LLE FLEX 8x5000 4W-600lm/m 827 ADV3	827/359	570 lm/m	500 lm/m	161 mA/m	4.1 W/m	139 lm/W	130 lm/W	> 80
LLE FLEX 8x5000 4W-600lm/m 830 ADV3	830/359	550 lm/m	480 lm/m	151 mA/m	3.9 W/m	141 lm/W	131 lm/W	> 80
LLE FLEX 8x5000 4W-600lm/m 840 ADV3	840/359	570 lm/m	499 lm/m	146 mA/m	3.7 W/m	154 lm/W	144 lm/W	> 80
LLE FLEX 8x5000 4W-600lm/m 865 ADV3	865/359	570 lm/m	495 lm/m	146 mA/m	3.7 W/m	154 lm/W	144 lm/W	> 80
LLE FLEX 8x5000 7W-1200lm/m 827 ADV3	827/359	1,120 lm/m	1017 lm/m	327 mA/m	8.1 W/m	138 lm/W	129 lm/W	> 80
LLE FLEX 8x5000 7W-1200lm/m 830 ADV3	830/359	1,100 lm/m	997 lm/m	312 mA/m	7.7 W/m	143 lm/W	134 lm/W	> 80
LLE FLEX 8x5000 7W-1200lm/m 840 ADV3	840/359	1,100 lm/m	997 lm/m	292 mA/m	7.3 W/m	151 lm/W	141 lm/W	> 80
LLE FLEX 8x5000 7W-1200lm/m 865 ADV3	865/359	1,100 lm/m	997 lm/m	292 mA/m	7.3 W/m	151 lm/W	141 lm/W	> 80
LLE FLEX 8x5000 11W-1800lm/m 827 ADV3	827/359	1,690 lm/m	1,549 lm/m	508 mA/m	12.4 W/m	136 lm/W	128 lm/W	> 80
LLE FLEX 8x5000 11W-1800lm/m 830 ADV3	830/359	1,610 lm/m	1,479 lm/m	468 mA/m	11.5 W/m	140 lm/W	132 lm/W	> 80
LLE FLEX 8x5000 11W-1800lm/m 840 ADV3	840/359	1,640 lm/m	1,499 lm/m	448 mA/m	11.0 W/m	149 lm/W	140 lm/W	> 80
LLE FLEX 8x5000 11W-1800lm/m 865 ADV3	865/359	1,640 lm/m	1,499 lm/m	448 mA/m	11.0 W/m	149 lm/W	140 lm/W	> 80
LLE FLEX 8x5000 16W-2500lm/m 827 ADV3	827/359	2,330 lm/m	2,144 lm/m	714 mA/m	17.4 W/m	134 lm/W	125 lm/W	> 80
LLE FLEX 8x5000 16W-2500lm/m 830 ADV3	830/359	2,290 lm/m	2,112 lm/m	679 mA/m	16.5 W/m	139 lm/W	129 lm/W	> 80
LLE FLEX 8x5000 16W-2500lm/m 840 ADV3	840/359	2,290 lm/m	2,112 lm/m	639 mA/m	15.6 W/m	147 lm/W	137 lm/W	> 80
LLE FLEX 8x5000 16W-2500lm/m 865 ADV3	865/359	2,290 lm/m	2,112 lm/m	639 mA/m	15.6 W/m	147 lm/W	137 lm/W	> 80

[®] Integral measurement over the complete module.

[®] For 5 m reel max. 2 solder joints.

[®] Exceeding the max. operating voltage leads to an overload on the LLE FLEX. This may in turn result in a reduction in lifetime or even in destruction.

[®] Tolerance of useful light flux - 0 % / + 20 %. Measurement uncertainty ± 10 %. Values given for 1 m LLE FLEX.

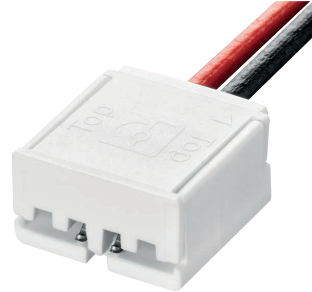
[®] Tolerance of expected light flux - 0 % / + 20 %. Measurement uncertainty ± 10 %. Values given for 1 m LLE FLEX. Based on calculation.

[®] Tolerance of power consumption Pon ± 15 %. Measurement uncertainty ± 5 %. Values given for 1 m LLE FLEX.

Connector for LLE FLEX

Product description

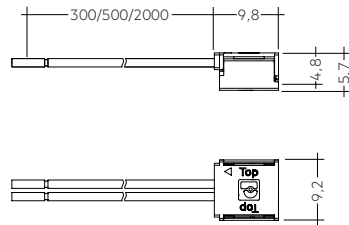
- For connection of LLE FLEX 8 mm modules (SNC2, ADV3 and EXC3)
- For internal wiring only (no strain relief functionality)
- Easy assembly: For assembly instructions see application note available at www.tridonic.com
- Glow wire test according to IEC 60695-2-11: 650 °C
- Max. 4 A in connection with LLE FLEX
- Urated = 29,9 V
- Wire cross section AWG 22



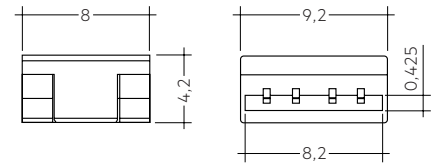
ACL connector Wire-PCB



ACL connector PCB-PCB



ACL connector Wire-PCB



ACL connector PCB-PCB

Ordering data

Type	Article number	Cable length	Packaging carton	Weight per pc.
ACL connector Wire-PCB 300mm	28003846	300 mm	20 pc(s).	0.002 kg
ACL connector Wire-PCB 500mm	28003847	500 mm	20 pc(s).	0.002 kg
ACL connector Wire-PCB 2000mm	28003848	2,000 mm	10 pc(s).	0.002 kg
ACL connector PCB-PCB	28003849	–	25 pc(s).	0.001 kg

LED driver matrix – Dimmable PRE – LLE FLEX 8mm ADV3

Type	PRE 18W	PRE 35W	PRE 60W	PRE 100W	PRE 150W
Article number	28003517 28003519	28002415 28001662 28003520	28002416 28001663 28003520	28002417 28001253 28001436	28002418 28001437
LLE FLEX UL certificated	class 2	class 2	class 2	no	no

Type	Assignable LED driver				
LLE FLEX 8x5000 4W-600lm/m 827 ADV3	80–420 cm	100–820 cm	170–1,420 cm	280–2,360 cm	420–3,550 cm
LLE FLEX 8x5000 4W-600lm/m 830 ADV3	80–450 cm	110–870 cm	180–1,510 cm	300–2,520 cm	450–3,780 cm
LLE FLEX 8x5000 4W-600lm/m 840 ADV3	90–460 cm	110–900 cm	190–1,560 cm	310–2,600 cm	460–3,910 cm
LLE FLEX 8x5000 4W-600lm/m 865 ADV3					
LLE FLEX 8x5000 7W-1200lm/m 827 ADV3	40–210 cm	50–410 cm	90–700 cm	140–1,180 cm	210–1,770 cm
LLE FLEX 8x5000 7W-1200lm/m 830 ADV3	40–220 cm	50–430 cm	90–740 cm	150–1,230 cm	220–1,850 cm
LLE FLEX 8x5000 7W-1200lm/m 840 ADV3	50–230 cm	60–460 cm	100–790 cm	160–1,320 cm	230–1,930 cm
LLE FLEX 8x5000 7W-1200lm/m 865 ADV3					
LLE FLEX 8x5000 11W-1800lm/m 827 ADV3	30–130 cm	40–260 cm	60–450 cm	90–760 cm	140–1,140 cm
LLE FLEX 8x5000 11W-1800lm/m 830 ADV3	30–140 cm	40–280 cm	60–490 cm	100–820 cm	150–1,240 cm
LLE FLEX 8x5000 11W-1800lm/m 840 ADV3	30–150 cm	40–300 cm	60–510 cm	100–860 cm	150–1,290 cm
LLE FLEX 8x5000 11W-1800lm/m 865 ADV3					
LLE FLEX 8x5000 16W-2500lm/m 827 ADV3	20–90 cm	30–190 cm	40–320 cm	70–540 cm	100–810 cm
LLE FLEX 8x5000 16W-2500lm/m 830 ADV3	20–100 cm	30–200 cm	40–340 cm	70–570 cm	100–860 cm
LLE FLEX 8x5000 16W-2500lm/m 840 ADV3	20–100 cm	30–210 cm	50–360 cm	70–600 cm	110–910 cm
LLE FLEX 8x5000 16W-2500lm/m 865 ADV3					

LED driver matrix – Fixed output EXC – LLE FLEX 8mm ADV3

Type	EXC 35W	EXC 75W	EXC 100W	EXC 200W
Article number	28003295	28003296	28003297	28003298
LLE FLEX UL certificated	class 2	class 2	no	no

Type	Assignable LED driver			
LLE FLEX 8x5000 4W-600lm/m 827 ADV3	100–810 cm	220–1,740 cm	280–2,320 cm	560–4,650 cm
LLE FLEX 8x5000 4W-600lm/m 830 ADV3	110–860 cm	230–1,860 cm	300–2,480 cm	600–4,950 cm
LLE FLEX 8x5000 4W-600lm/m 840 ADV3	110–890 cm	240–1,920 cm	310–2,560 cm	620–5,120 cm
LLE FLEX 8x5000 4W-600lm/m 865 ADV3				
LLE FLEX 8x5000 7W-1200lm/m 827 ADV3	50–400 cm	110–870 cm	140–1,160 cm	280–2,330 cm
LLE FLEX 8x5000 7W-1200lm/m 830 ADV3	60–420 cm	120–970 cm	160–1,300 cm	290–2,440 cm
LLE FLEX 8x5000 7W-1200lm/m 840 ADV3	60–450 cm	120–970 cm	160–1,300 cm	310–2,600 cm
LLE FLEX 8x5000 7W-1200lm/m 865 ADV3				
LLE FLEX 8x5000 11W-1800lm/m 827 ADV3	40–260 cm	70–560 cm	90–750 cm	180–1,500 cm
LLE FLEX 8x5000 11W-1800lm/m 830 ADV3	40–280 cm	80–610 cm	100–810 cm	200–1,630 cm
LLE FLEX 8x5000 11W-1800lm/m 840 ADV3	40–290 cm	80–640 cm	110–850 cm	210–1,700 cm
LLE FLEX 8x5000 11W-1800lm/m 865 ADV3				
LLE FLEX 8x5000 16W-2500lm/m 827 ADV3	30–180 cm	50–400 cm	70–530 cm	130–1,070 cm
LLE FLEX 8x5000 16W-2500lm/m 830 ADV3	30–190 cm	50–420 cm	70–560 cm	140–1,130 cm
LLE FLEX 8x5000 16W-2500lm/m 840 ADV3	30–210 cm	60–450 cm	80–600 cm	150–1,200 cm
LLE FLEX 8x5000 16W-2500lm/m 865 ADV3				

LED driver matrix – Fixed output SNC – LLE FLEX 8mm ADV3

Type	SNC 18W	SNC 35W	SNC 60W	SNC 100W	SNC 150W
Article number	87500938 87500931	87500852 87500854	87500665 87500669	87500666 87500670	87500855
LLE FLEX UL certificated	class 2	class 2	class 2	no	no

Type	Assignable LED driver				
LLE FLEX 8x5000 5W-600lm/m 827 SNC2	150–420 cm	290–820 cm	500–1,420 cm	830–2,360 cm	1,660–4,730 cm
LLE FLEX 8x5000 5W-600lm/m 830 SNC2	160–450 cm	310–880 cm	530–1,510 cm	890–2,520 cm	1,770–5,040 cm
LLE FLEX 8x5000 5W-600lm/m 840 SNC2	170–460 cm	320–910 cm	550–1,560 cm	920–2,600 cm	1,830–5,210 cm
LLE FLEX 8x5000 5W-600lm/m 865 SNC2					
LLE FLEX 8x5000 10W-1200lm/m 827 SNC2	80–210 cm	150–410 cm	250–700 cm	410–1,180 cm	820–2,360 cm
LLE FLEX 8x5000 10W-1200lm/m 830 SNC2	80–220 cm	150–430 cm	260–740 cm	430–1,230 cm	860–2,470 cm
LLE FLEX 8x5000 10W-1200lm/m 840 SNC2	90–230 cm	160–460 cm	280–790 cm	460–1,320 cm	920–2,640 cm
LLE FLEX 8x5000 10W-1200lm/m 865 SNC2					
LLE FLEX 8x5000 15W-1800lm/m 827 SNC2	50–130 cm	100–260 cm	160–450 cm	270–760 cm	530–1,520 cm
LLE FLEX 8x5000 15W-1800lm/m 830 SNC2	60–140 cm	100–290 cm	180–490 cm	290–820 cm	570–1,650 cm
LLE FLEX 8x5000 15W-1800lm/m 840 SNC2	60–150 cm	110–300 cm	180–510 cm	300–860 cm	600–1,730 cm
LLE FLEX 8x5000 15W-1800lm/m 865 SNC2					
LLE FLEX 8x5000 21W-2500lm/m 827 SNC2	40–90 cm	70–190 cm	120–320 cm	190–540 cm	380–1,090 cm
LLE FLEX 8x5000 21W-2500lm/m 830 SNC2	40–100 cm	70–200 cm	120–340 cm	200–570 cm	400–1,140 cm
LLE FLEX 8x5000 21W-2500lm/m 840 SNC2	40–100 cm	80–210 cm	130–360 cm	210–600 cm	420–1,210 cm
LLE FLEX 8x5000 21W-2500lm/m 865 SNC2					

1. Standards

IEC 62031
IEC 62471
IEC 62778
IEC 61000-4-2
UL 8750 (for CLASS2 circuits and dry locations)

1.1 Photometric code

Key for photometric code, e. g. 830 / 349

1 st digit	2 nd + 3 rd digit	4 th digit	5 th digit	6 th 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)	
					Code	Luminous flux
7	70 – 79				7	≥ 70 %
8	80 – 89				8	≥ 80 %
9	≥90	9	≥ 90 %			

1.2 Energy classification

Type	Colour temperature	Energy classification	Energy consumption
LLE FLEX 8x5000 4W-600lm/m			
LLE FLEX 8x5000 4W-600lm/m 827 ADV3	2,700 K	E	5 kWh / 1,000 h
LLE FLEX 8x5000 4W-600lm/m 830 ADV3	3,000 K	E	4 kWh / 1,000 h
LLE FLEX 8x5000 4W-600lm/m 840 ADV3	4,000 K	D	4 kWh / 1,000 h
LLE FLEX 8x5000 4W-600lm/m 865 ADV3	6,500 K	D	4 kWh / 1,000 h
LLE FLEX 8x5000 7W-1200lm/m			
LLE FLEX 8x5000 7W-1200lm/m 827 ADV3	2,700 K	E	9 kWh / 1,000 h
LLE FLEX 8x5000 7W-1200lm/m 830 ADV3	3,000 K	E	8 kWh / 1,000 h
LLE FLEX 8x5000 7W-1200lm/m 840 ADV3	4,000 K	D	8 kWh / 1,000 h
LLE FLEX 8x5000 7W-1200lm/m 865 ADV3	6,500 K	D	8 kWh / 1,000 h
LLE FLEX 8x5000 11W-1800lm/m			
LLE FLEX 8x5000 11W-1800lm/m 827 ADV3	2,700 K	E	13 kWh / 1,000 h
LLE FLEX 8x5000 11W-1800lm/m 830 ADV3	3,000 K	E	12 kWh / 1,000 h
LLE FLEX 8x5000 11W-1800lm/m 840 ADV3	4,000 K	D	11 kWh / 1,000 h
LLE FLEX 8x5000 11W-1800lm/m 865 ADV3	6,500 K	D	11 kWh / 1,000 h
LLE FLEX 8x5000 16W-2500lm/m			
LLE FLEX 8x5000 16W-2500lm/m 827 ADV3	2,700 K	E	18 kWh / 1,000 h
LLE FLEX 8x5000 16W-2500lm/m 830 ADV3	3,000 K	E	17 kWh / 1,000 h
LLE FLEX 8x5000 16W-2500lm/m 840 ADV3	4,000 K	D	16 kWh / 1,000 h
LLE FLEX 8x5000 16W-2500lm/m 865 ADV3	6,500 K	D	16 kWh / 1,000 h

Energy label and further information at 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 65 °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	-35... +80 °C
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Operation only in non condensing environment.

Humidity during processing of the module should be between 0 to 70 %.

2.3 Thermal design and heat sink

The rated life of LED products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the LLE will be greatly reduced or the LLE may be destroyed.

2.4 Heat sink values

LLE FLEX 8mm 600lm/m

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	–	self cooling
35 °C	65 °C	–	self cooling
40 °C	65 °C	–	self cooling
45 °C	65 °C	–	self cooling
50 °C	65 °C	–	self cooling

LLE FLEX 8mm 1200lm/m

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	–	self cooling
35 °C	65 °C	–	self cooling
40 °C	65 °C	69.6 k/W	10 cm ²
45 °C	65 °C	55.7 k/W	12 cm ²
50 °C	65 °C	41.7 k/W	16 cm ²

LLE FLEX 8mm 1800lm/m

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	75.1 k/W	9 cm ²
35 °C	65 °C	56.3 k/W	12 cm ²
40 °C	65 °C	46.9 k/W	14 cm ²
45 °C	65 °C	37.5 k/W	18 cm ²
50 °C	65 °C	28.1 k/W	24 cm ²

LLE FLEX 8mm 2500lm/m

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	53.1 k/W	13 cm ²
35 °C	65 °C	39.8 k/W	17 cm ²
40 °C	65 °C	33.2 k/W	20 cm ²
45 °C	65 °C	26.5 k/W	25 cm ²
50 °C	65 °C	19.9 k/W	34 cm ²

^① Values for a single segment of the LLE FLEX (100 mm).

Notes

The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation.

A heat transfer coefficient of 0,0015 is used for the calculation.

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:

- SELV
- Short-circuit protection
- Overload protection
- Overtemperature protection



LLE modules must be supplied by a constant voltage LED driver. Operation with a constant current LED driver will lead to an irreversible damage of the module.

Wrong polarity can damage the LLE FLEX.

3.2 Mounting instruction



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

The LLE FLEX is separable each 100 mm with the full function of each segment.

The LLE FLEX is to be installed within 2 weeks after it has been removed from the ESD blister packaging (contacting by means of soldering or ACL connector).

Insulation must be ensured at the contact area of the segments (e. g. by using additional insulation in the area of the solder connection).

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

Prevent shear- or peel forces

Min. bending radius of the LLE FLEX is 2 cm.

For details see Application Note: www.tridonic.com



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.

3.3 Soldering guidelines



The modules are suitable only for manual soldering (max. 275 °C, 2 seconds).

3.3 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

LLE FLEX 8mm 600lm/m ADV3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	66,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	62,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	57,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	53,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	50,000 h	67,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	46,000 h	62,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	43,000 h	58,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	40,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h

LLE FLEX 8mm 1200lm/m ADV3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	65,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	60,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	56,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	52,000 h	70,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	49,000 h	66,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	46,000 h	61,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	42,000 h	57,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	40,000 h	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h

LLE FLEX 8mm 1800lm/m ADV3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	64,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	59,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	52,000 h	69,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	48,000 h	65,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	45,000 h	60,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	42,000 h	56,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	39,000 h	53,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h

LLE FLEX 8mm 2500lm/m ADV3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	62,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	45 °C	58,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	50 °C	54,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	55 °C	50,000 h	68,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	60 °C	47,000 h	63,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	65 °C	44,000 h	59,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	70 °C	41,000 h	55,000 h	>72,000 h	>72,000 h	>72,000 h	>72,000 h
	75 °C	38,000 h	52,000 h	>72,000 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 Imax

6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

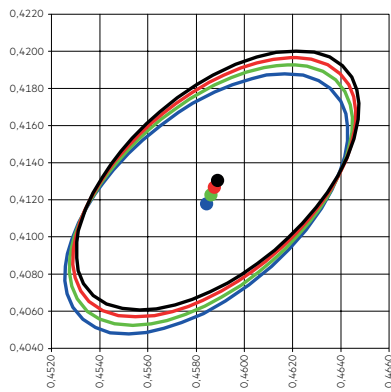
The specified colour coordinates are measured integral by a current impulse with typical values of module and a duration of 100 ms.

The ambient temperature of the measurement is $t_a = 25^\circ\text{C}$.

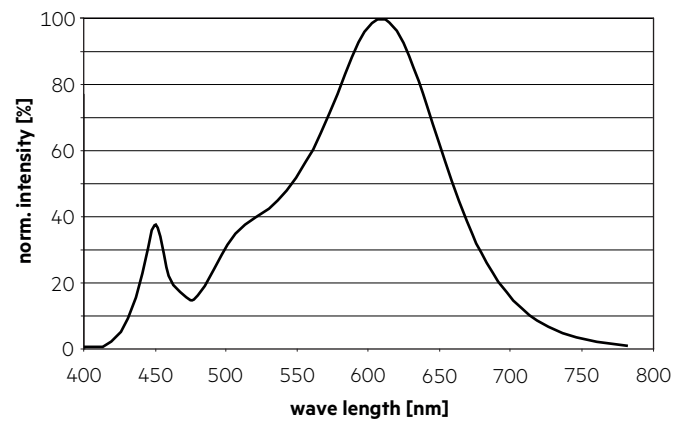
The measurement tolerance of the colour coordinates are ± 0.01 .

2,700 K

	x0	y0
Centre 600 lm/m	0.4579	0.4091
Centre 1,200 lm/m	0.4578	0.4087
Centre 1,800 lm/m	0.4576	0.4083
Centre 2,500 lm/m	0.4574	0.4078

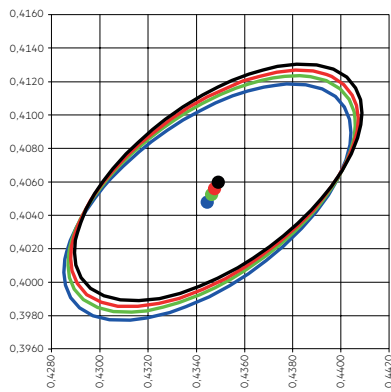


— MacAdam Ellipse: 3SDCM

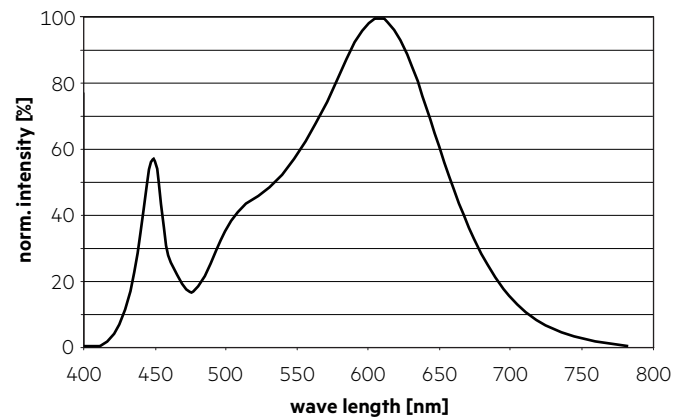


3,000 K

	x0	y0
Centre 600 lm/m	0.4339	0.4020
Centre 1,200 lm/m	0.4338	0.4016
Centre 1,800 lm/m	0.4336	0.4013
Centre 2,500 lm/m	0.4335	0.4008

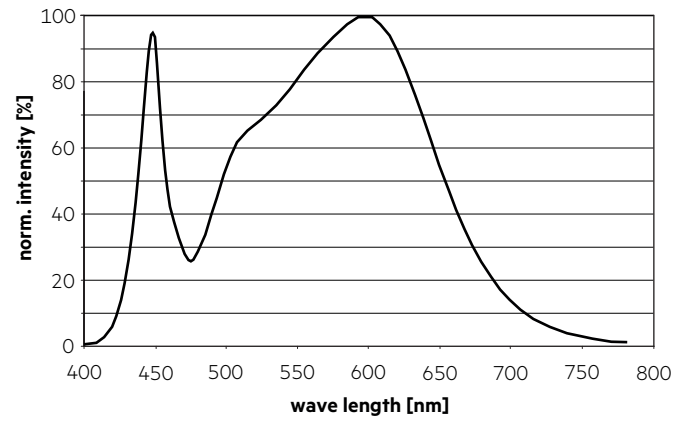
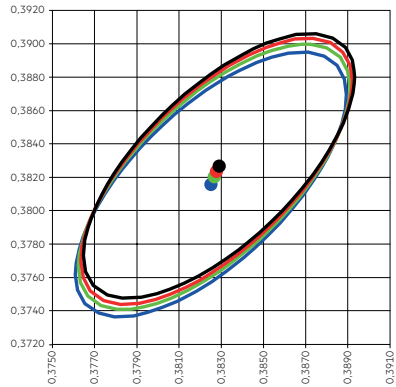


— MacAdam Ellipse: 3SDCM



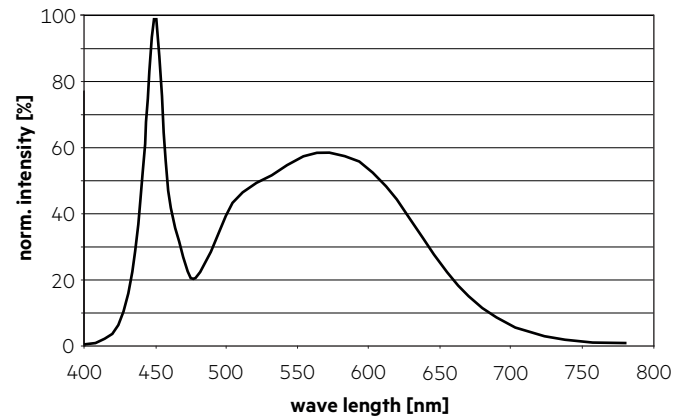
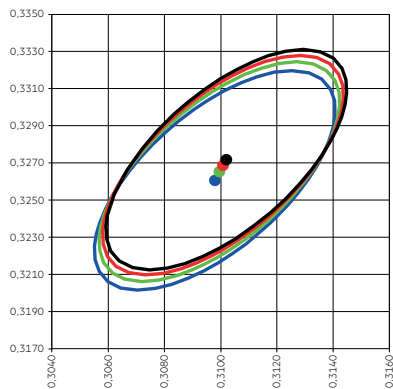
4,000 K

	x0	y0
Centre 600 lm/m	0.3819	0.3787
Centre 1,200 lm/m	0.3818	0.3784
Centre 1,800 lm/m	0.3817	0.3780
Centre 2,500 lm/m	0.3815	0.3776



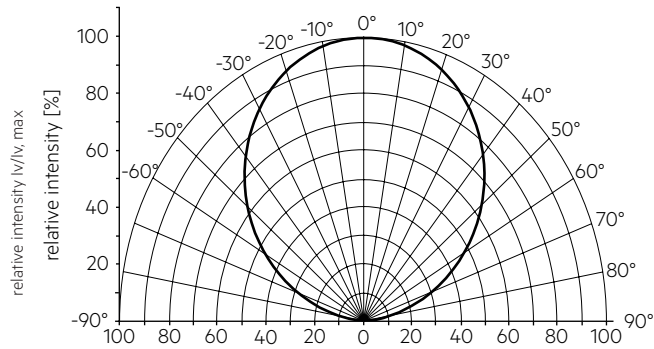
6,500 K

	x0	y0
Centre 600 lm/m	0.3102	0.3272
Centre 1,200 lm/m	0.3101	0.3269
Centre 1,800 lm/m	0.3100	0.3265
Centre 2,500 lm/m	0.3098	0.3261



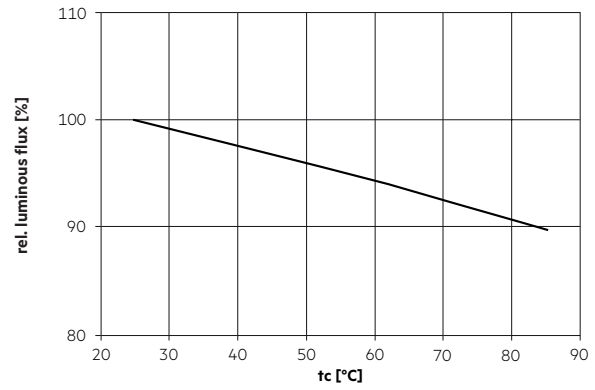
6.2 Light distribution

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



The colour temperature is measured over the complete module. 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. 1.5 cm) should be used.

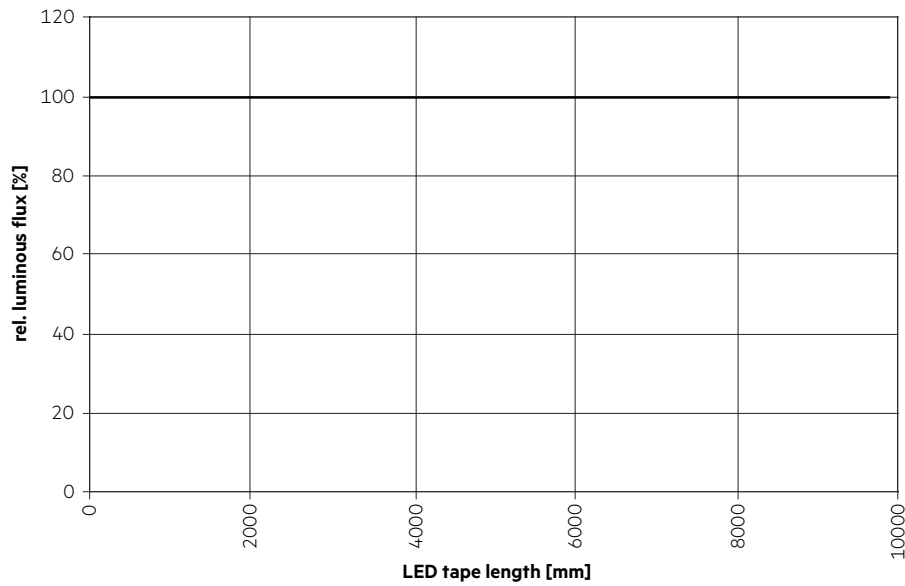
6.3 Relative luminous flux vs. tc temperature



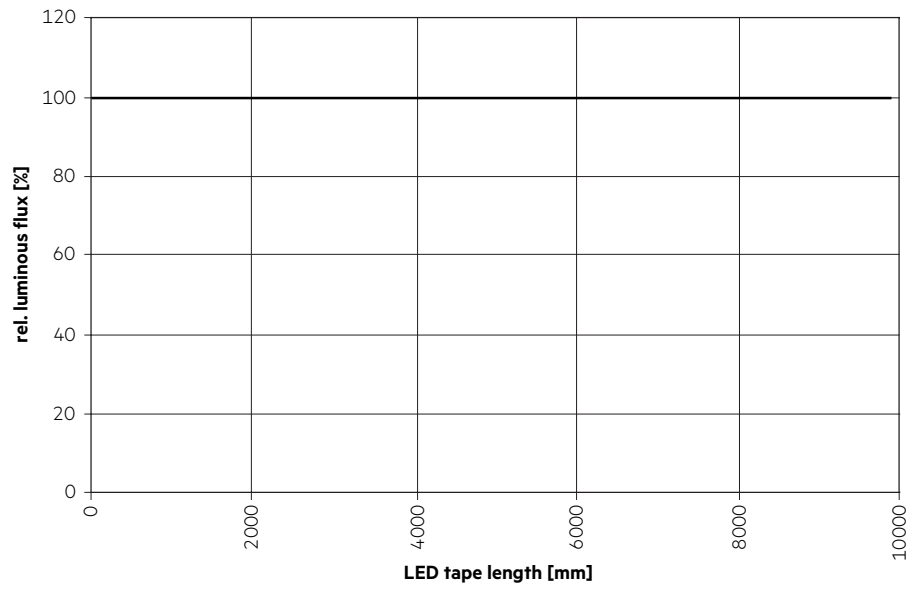
6.4 Relative luminous flux vs. LED tape length

The graphs show the luminous flux drop of the first compare to the last segment over the used tape length.

LLE FLEX 8mm 600lm/m ADV3:



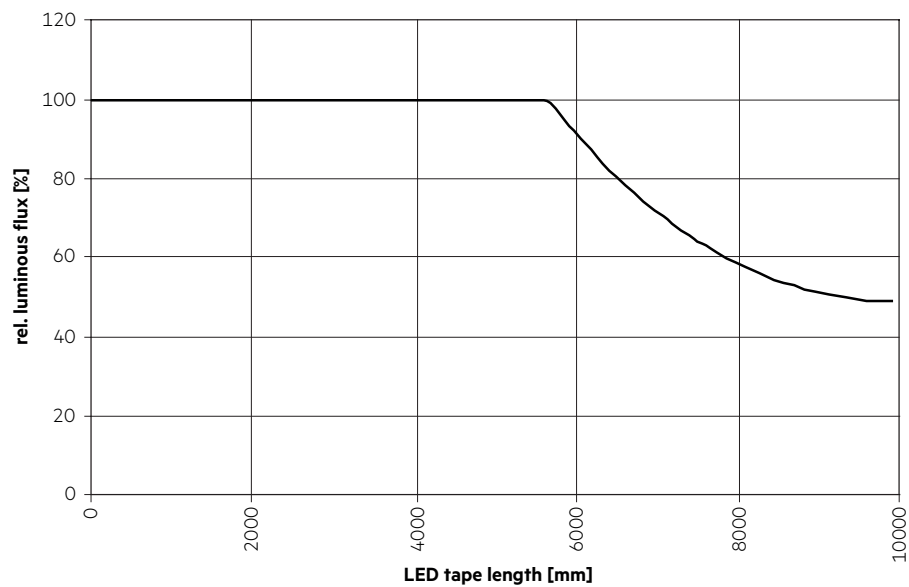
LLE FLEX 8mm 1200lm/m ADV3:



LLE FLEX 8mm 1800lm/m ADV3:



LLE FLEX 8mm 2500lm/m ADV3:



7. Miscellaneous

7.1 Additional information

Additional technical information at www.tridonic.com → Technical Data

Lifetime declarations are informative and represent no warranty claim.