

Module LLE FLEX 8mm EXC3

Modules LLE FLEX excite

**Product description**

- _ Dimmable 24 V constant voltage LED flextape (SELV)
- _ Ideal for application on aluminium extrusions but also for various decorative lighting applications such as cove lighting, façade accent lighting etc.
- _ 4,000 K module COI approved acc. to AS/NZS1680.2.5:1997
- _ 1 reel = 5 m or 50 m
- _ Long lifetime up to 72,000 hours
- _ 5 years guarantee (conditions at <https://www.tridonic.com/manufacture-guarantee-conditions>)

Optical properties

- _ Colour temperature 2,700, 3,000, 4,000 and 6,500 K with SDCM 3^①
- _ Useful luminous flux 2,595 lm/m at $t_p = 25^\circ\text{C}$
- _ Efficacy of the LED module 126 lm/W at $t_p = 25^\circ\text{C}$
- _ Small colour tolerance (MacAdam 3), CRI 90

Mechanical properties

- _ Extremely narrow pitch distance enables short distance to diffuser and outstanding homogeneity
- _ High design freedom due to 5 cm cut-options
- _ Self-adhesive 3M tape at the backside for simple mounting on different surfaces
- _ PCB to PCB and wire to PCB connectors for toolless handling and connection
- _ reel2reel – No solder joints on the tape, easy to separate and low length tolerances^②

System solution

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

^① Integral measurement over the complete module.^② For 5 m reel max. 2 solder joints and for 50 m reel max. 6 solder joints.**Website**<http://www.tridonic.com/28003606>

Spotlights



Downlights



Linear



Area



Floor | Wall



Free-standing



Street



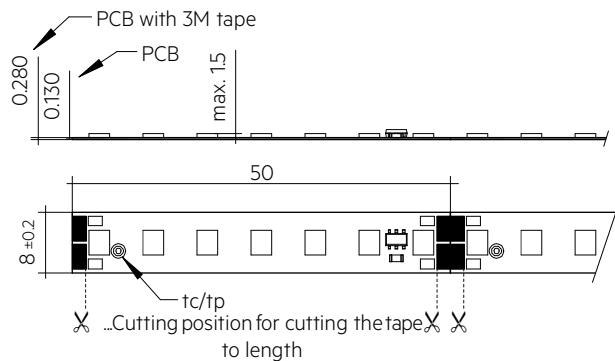
Decorative



High bay

Module LLE FLEX 8mm EXC3

Modules LLE FLEX excite

**Ordering data**

Type	Article number	Colour temperature	Packaging, carton	Weight per pc.
5,000 mm reel				
LLE FLEX 8x5000 5W-600lm/m 927 EXC3	28003606	2,700 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 5W-600lm/m 930 EXC3	28003607	3,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 5W-600lm/m 940 EXC3	28003608	4,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 5W-600lm/m 965 EXC3	28003609	6,500 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3	28003610	2,700 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3	28003611	3,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	28003612	4,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3	28003613	6,500 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3	28003614	2,700 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3	28003615	3,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3	28003616	4,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3	28003617	6,500 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	28003618	2,700 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3	28003619	3,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3	28003620	4,000 K	1 pc(s).	0.139 kg
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3	28003621	6,500 K	1 pc(s).	0.139 kg
50,000 mm reel				
LLE FLEX 8x50000 10W-1200lm/m 927 EXC3	28003675	2,700 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 10W-1200lm/m 930 EXC3	28003676	3,000 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 10W-1200lm/m 940 EXC3	28003677	4,000 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 15W-1800lm/m 927 EXC3	28003679	2,700 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 15W-1800lm/m 930 EXC3	28003680	3,000 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 15W-1800lm/m 940 EXC3	28003681	4,000 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 21W-2500lm/m 927 EXC3	28003683	2,700 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 21W-2500lm/m 930 EXC3	28003684	3,000 K	1 pc(s).	0.490 kg
LLE FLEX 8x50000 21W-2500lm/m 940 EXC3	28003685	4,000 K	1 pc(s).	0.490 kg

Technical data

Beam characteristic	120°
Ambient temperature ta	-35 ... +50 °C
tp rated	65 °C
tc	75 °C
Supply voltage DC	24 V
Supply voltage range DC ®	21.5 – 26.4 V
Insulation test voltage	0.5 kV
Colour tolerance	3 SDCM
ESD classification	Severity level 1
Risk group (IEC 62471) for 600 – 1,800 lm/m	RG0
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 Year(s)

Approval marks**Standards**

IEC 62031, IEC 62471, IEC 61000-4-2, UL 8750

Specific technical data

Type	Article number	Photometric code	Useful luminous flux at tp = 25 °C ^③	Expected luminous flux at tp rated ^④	Typ. current consumption at tp rated	Power consumption Pon at tp = 25 °C ^⑤	Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Colour rendering index CRI ^⑥ at tp = 25 °C
5,000 mm roll									
LLE FLEX 8x5000 5W-600lm/m 927 EXC3	28003606	927/359	644 lm/m	574 lm/m	222 mA/m	5.6 W/m	140 lm/W	134 lm/W	> >90
LLE FLEX 8x5000 5W-600lm/m 930 EXC3	28003607	930/359	660 lm/m	590 lm/m	222 mA/m	5.6 W/m	115 lm/W	107 lm/W	> >90
LLE FLEX 8x5000 5W-600lm/m 940 EXC3	28003608	940/359	627 lm/m	557 lm/m	202 mA/m	5.1 W/m	118 lm/W	110 lm/W	> >90
LLE FLEX 8x5000 5W-600lm/m 965 EXC3	28003609	965/359	627 lm/m	557 lm/m	202 mA/m	5.1 W/m	123 lm/W	114 lm/W	> >90
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3	28003610	927/359	1,230 lm/m	1,127 lm/m	424 mA/m	10.4 W/m	123 lm/W	114 lm/W	> >90
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3	28003611	930/359	1,260 lm/m	1,148 lm/m	424 mA/m	10.4 W/m	118 lm/W	111 lm/W	> >90
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	28003612	940/359	1,200 lm/m	1,088 lm/m	384 mA/m	9.5 W/m	121 lm/W	114 lm/W	> >90
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3	28003613	965/359	1,200 lm/m	1,088 lm/m	384 mA/m	9.5 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3	28003614	927/359	1,820 lm/m	1,679 lm/m	636 mA/m	15.5 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3	28003615	930/359	1,860 lm/m	1,710 lm/m	636 mA/m	15.5 W/m	117 lm/W	110 lm/W	> >90
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3	28003616	940/359	1,830 lm/m	1,681 lm/m	596 mA/m	14.5 W/m	120 lm/W	113 lm/W	> >90
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3	28003617	965/359	1,830 lm/m	1,681 lm/m	596 mA/m	14.5 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	28003618	927/359	2,550 lm/m	2,354 lm/m	908 mA/m	22.0 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3	28003619	930/359	2,480 lm/m	2,293 lm/m	858 mA/m	20.8 W/m	116 lm/W	108 lm/W	> >90
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3	28003620	940/359	2,595 lm/m	2,398 lm/m	858 mA/m	20.8 W/m	119 lm/W	112 lm/W	> >90
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3	28003621	965/359	2,595 lm/m	2,398 lm/m	858 mA/m	20.8 W/m	125 lm/W	117 lm/W	> >90
50,000 mm roll									
LLE FLEX 8x50000 10W-1200lm/m 927 EXC3	28003675	927/359	1,230 lm/m	1,127 lm/m	424 mA/m	10.4 W/m	122 lm/W	114 lm/W	> >90
LLE FLEX 8x50000 10W-1200lm/m 930 EXC3	28003676	930/359	1,260 lm/m	1,148 lm/m	424 mA/m	10.4 W/m	118 lm/W	111 lm/W	> >90
LLE FLEX 8x50000 10W-1200lm/m 940 EXC3	28003677	940/359	1,200 lm/m	1,088 lm/m	384 mA/m	9.5 W/m	121 lm/W	114 lm/W	> >90
LLE FLEX 8x50000 15W-1800lm/m 927 EXC3	28003679	927/359	1,820 lm/m	1,679 lm/m	636 mA/m	15.5 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x50000 15W-1800lm/m 930 EXC3	28003680	930/359	1,860 lm/m	1,710 lm/m	636 mA/m	15.5 W/m	117 lm/W	110 lm/W	> >90
LLE FLEX 8x50000 15W-1800lm/m 940 EXC3	28003681	940/359	1,830 lm/m	1,681 lm/m	596 mA/m	14.5 W/m	120 lm/W	113 lm/W	> >90
LLE FLEX 8x50000 21W-2500lm/m 927 EXC3	28003683	927/359	2,550 lm/m	2,354 lm/m	908 mA/m	22.0 W/m	126 lm/W	118 lm/W	> >90
LLE FLEX 8x50000 21W-2500lm/m 930 EXC3	28003684	930/359	2,480 lm/m	2,293 lm/m	858 mA/m	20.8 W/m	116 lm/W	108 lm/W	> >90
LLE FLEX 8x50000 21W-2500lm/m 940 EXC3	28003685	940/359	2,595 lm/m	2,398 lm/m	858 mA/m	20.8 W/m	119 lm/W	112 lm/W	> >90

③ Exceeding the max. operating voltage leads to an overload on the LLE FLEX. This may in turn result in a significant reduction in lifetime or even in destruction.

④ Tolerance of useful light flux - 0 % / + 20 %. Measurement uncertainty ± 10 %. Values given for 1 m LLE FLEX.

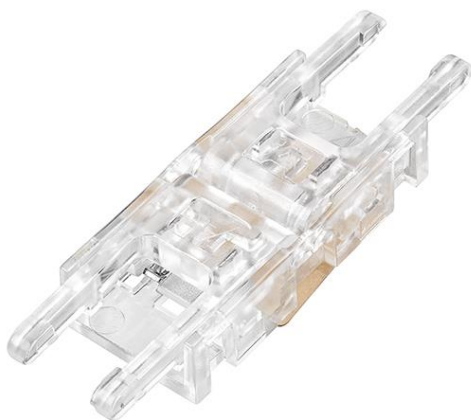
⑤ Tolerance of expected light flux - 0 % / + 20 %. Measurement uncertainty ± 10 %. Values given for 1 m LLE FLEX. Based on calculation.

⑥ Tolerance of power consumption Pon ± 15 %. Measurement uncertainty ± 5 %. Values given for 1 m LLE FLEX.

⑦ Measurement uncertainty CRI ±2.

Connector for LLE FLEX

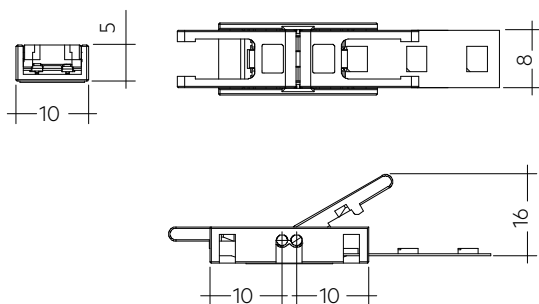
Accessory



Product description

- _ For connection of LLE FLEX module
- _ For internal wiring only (no strain relief functionality)
- _ Connector can be closed and re-opened easily: For assembly instructions see application note available at www.tridonic.com
- _ Glow wire test according to IEC 60695-2-11
- _ Max. 5 A in connection with LLE FLEX
- _ Urated = 24 – 48 V
- _ Wire cross section AWG 18

Website

<http://www.tridonic.com/28004985>


Ordering data

Type	Article number	Packaging, carton	Weight per pc.
ACL flex connector Wire - PCB 100mm	28004985	20 pc(s).	0.004 kg
ACL flex connector Wire - PCB 500mm	28004986	20 pc(s).	0.020 kg
ACL flex connector Wire - PCB 2000mm	28004987	10 pc(s).	0.072 kg
ACL flex connector PCB - PCB	28004988	25 pc(s).	0.001 kg

LED driver matrix – Dimmable PRE – LLE FLEX 8mm EXC3

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 5W-600lm/m 927 EXC3	55–315 cm	75–615 cm	120–1,055 cm	205–1,760 cm	300–2,645 cm
LLE FLEX 8x5000 5W-600lm/m 930 EXC3					
LLE FLEX 8x5000 5W-600lm/m 940 EXC3					
LLE FLEX 8x5000 5W-600lm/m 965 EXC3	60–345 cm	80–675 cm	135–1,165 cm	220–1,940 cm	330–2,910 cm
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3					
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3					
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	35–180 cm	45–355 cm	70–610 cm	120–1,020 cm	175–1,530 cm
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3					
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3					
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3	20–110 cm	25–210 cm	45–365 cm	70–615 cm	105–920 cm
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3					
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3					
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	15–80 cm	20–155 cm	35–270 cm	55–455 cm	80–685 cm
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3					
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3					
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3					

LED driver matrix – Fixed output EXC – LLE FLEX 8mm EXC3

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 5W-600lm/m 927 EXC3	75–595 cm	155–1,280 cm	205–1,705 cm	405–3,410 cm
LLE FLEX 8x5000 5W-600lm/m 930 EXC3				
LLE FLEX 8x5000 5W-600lm/m 940 EXC3				
LLE FLEX 8x5000 5W-600lm/m 965 EXC3	80–650 cm	170–1,400 cm	225–1,865 cm	445–3,735 cm
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3				
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3				
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	45–345 cm	90–745 cm	120–990 cm	235–1,985 cm
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3				
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3				
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3	25–210 cm	55–450 cm	75–605 cm	145–1,205 cm
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3				
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	30–225 cm	60–480 cm	80–645 cm	155–1,285 cm
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	20–145 cm	40–315 cm	50–420 cm	100–845 cm
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3				
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3				

LED driver matrix – Fixed output SNC – LLE FLEX 8mm EXC3

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 certified	class 2	class 2	class 2	no	no

Type	Assignable LED driver				
LLE FLEX 8x5000 5W-600lm/m 927 EXC3	110–315 cm	215–615 cm	360–1,055 cm	600–1,760 cm	1,200–3,525 cm
LLE FLEX 8x5000 5W-600lm/m 930 EXC3					
LLE FLEX 8x5000 5W-600lm/m 940 EXC3	120–345 cm	235–675 cm	395–1,165 cm	660–1,940 cm	1,320–3,880 cm
LLE FLEX 8x5000 5W-600lm/m 965 EXC3					
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3	60–165 cm	110–320 cm	190–550 cm	315–920 cm	630–1,845 cm
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3					
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	65–180 cm	125–355 cm	210–610 cm	350–1,020 cm	695–2,040 cm
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3					
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3	40–110 cm	75–215 cm	130–365 cm	210–615 cm	420–1,230 cm
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3					
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3	45–115 cm	80–230 cm	135–390 cm	225–655 cm	450–1,315 cm
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3					
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	30–75 cm	55–150 cm	90–255 cm	150–430 cm	295–860 cm
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3	30–80 cm	55–155 cm	95–270 cm	155–455 cm	310–910 cm
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3					
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3					

1. Standards

IEC 62031
IEC 62471
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 after 25% of the lifetime (max.6000h)	Luminous flux after 25% of the lifetime (max.6000h)
7	70 – 79	MacAdam initial	(max.6000h)	Code
8	80 – 89			Luminous flux
9	≥90			
				7 ≥ 70 %
				8 ≥ 80 %
				9 ≥ 90 %

1.2 Energy classification

Type	Colour temperature	Energy classification	Energy consumption
LLE FLEX 8x5000 5W-600lm/m			
LLE FLEX 8x5000 5W-600lm/m 927 EXC3	2,700 K	F	6 kWh / 1,000 h
LLE FLEX 8x5000 5W-600lm/m 930 EXC3	3,000 K	F	6 kWh / 1,000 h
LLE FLEX 8x5000 5W-600lm/m 940 EXC3	4,000 K	E	6 kWh / 1,000 h
LLE FLEX 8x5000 5W-600lm/m 965 EXC3	6,500 K	E	6 kWh / 1,000 h
LLE FLEX 8x5000 10W-1200lm/m			
LLE FLEX 8x5000 10W-1200lm/m 927 EXC3	2,700 K	F	11 kWh / 1,000 h
LLE FLEX 8x5000 10W-1200lm/m 930 EXC3	3,000 K	E	11 kWh / 1,000 h
LLE FLEX 8x5000 10W-1200lm/m 940 EXC3	4,000 K	E	10 kWh / 1,000 h
LLE FLEX 8x5000 10W-1200lm/m 965 EXC3	6,500 K	E	10 kWh / 1,000 h
LLE FLEX 8x5000 15W-1800lm/m			
LLE FLEX 8x5000 15W-1800lm/m 927 EXC3	2,700 K	E	16 kWh / 1,000 h
LLE FLEX 8x5000 15W-1800lm/m 930 EXC3	3,000 K	F	16 kWh / 1,000 h
LLE FLEX 8x5000 15W-1800lm/m 940 EXC3	4,000 K	E	15 kWh / 1,000 h
LLE FLEX 8x5000 15W-1800lm/m 965 EXC3	6,500 K	E	15 kWh / 1,000 h
LLE FLEX 8x5000 21W-2500lm/m			
LLE FLEX 8x5000 21W-2500lm/m 927 EXC3	2,700 K	E	22 kWh / 1,000 h
LLE FLEX 8x5000 21W-2500lm/m 930 EXC3	3,000 K	F	21 kWh / 1,000 h
LLE FLEX 8x5000 21W-2500lm/m 940 EXC3	4,000 K	E	21 kWh / 1,000 h
LLE FLEX 8x5000 21W-2500lm/m 965 EXC3	6,500 K	E	21 kWh / 1,000 h
LLE FLEX 8x50000 10W-1200lm/m			
LLE FLEX 8x50000 10W-1200lm/m 927 EXC3	2,700 K	F	11 kWh / 1,000 h
LLE FLEX 8x50000 10W-1200lm/m 930 EXC3	3,000 K	E	11 kWh / 1,000 h
LLE FLEX 8x50000 10W-1200lm/m 940 EXC3	4,000 K	E	10 kWh / 1,000 h
LLE FLEX 8x50000 15W-1800lm/m			
LLE FLEX 8x50000 15W-1800lm/m 927 EXC3	2,700 K	F	16 kWh / 1,000 h
LLE FLEX 8x50000 15W-1800lm/m 930 EXC3	3,000 K	E	16 kWh / 1,000 h
LLE FLEX 8x50000 15W-1800lm/m 940 EXC3	4,000 K	E	15 kWh / 1,000 h
LLE FLEX 8x50000 21W-2500lm/m			
LLE FLEX 8x50000 21W-2500lm/m 927 EXC3	2,700 K	F	22 kWh / 1,000 h
LLE FLEX 8x50000 21W-2500lm/m 930 EXC3	3,000 K	E	21 kWh / 1,000 h
LLE FLEX 8x50000 21W-2500lm/m 940 EXC3	4,000 K	E	21 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 600lm/m 9xx EXC3

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	270.99 K/W	self cooling
35 °C	65 °C	203.21 K/W	self cooling
40 °C	65 °C	169.32 K/W	self cooling
45 °C	65 °C	135.43 K/W	5 cm²
50 °C	65 °C	101.54 K/W	7 cm²

LLE FLEX 1200lm/m 9xx EXC3

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	149.28 K/W	4 cm²
35 °C	65 °C	111.93 K/W	6 cm²
40 °C	65 °C	93.25 K/W	7 cm²
45 °C	65 °C	74.57 K/W	9 cm²
50 °C	65 °C	55.89 K/W	12 cm²

LLE FLEX 1800lm/m 9xx EXC3

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	100.11 K/W	7 cm²
35 °C	65 °C	75.05 K/W	9 cm²
40 °C	65 °C	62.52 K/W	11 cm²
45 °C	65 °C	49.99 K/W	13 cm²
50 °C	65 °C	37.46 K/W	18 cm²

LLE FLEX 2500lm/m 9xx EXC3

ta	tp	R _{th, hs-a} ^①	Cooling area ^①
25 °C	65 °C	68.56 K/W	10 cm²
35 °C	65 °C	51.38 K/W	13 cm²
40 °C	65 °C	42.80 K/W	16 cm²
45 °C	65 °C	34.21 K/W	19 cm²
50 °C	65 °C	25.62 K/W	26 cm²

① Values for a single segment of the LLE FLEX (50 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 50 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 the connector ACL or 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 for LLE FLEX EXC3

LLE FLEX 600lm/m 9xx EXC3

LLE FLEX 1200lm/m 9xx EXC3

LLE FLEX 1800lm/m 9xx EXC3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	42k h	52k h	>72k h	>72k h	>72k h	>72k h
24 V	45 °C	40k h	50k h	>72k h	>72k h	>72k h	>72k h
24 V	50 °C	39k h	49k h	>72k h	>72k h	>72k h	>72k h
24 V	55 °C	37k h	47k h	>72k h	>72k h	>72k h	>72k h
24 V	60 °C	36k h	45k h	>72k h	>72k h	>72k h	>72k h
24 V	65 °C	34k h	44k h	69k h	>72k h	>72k h	>72k h
24 V	70 °C	33k h	42k h	66k h	>72k h	>72k h	>72k h
24 V	75 °C	31k h	41k h	64k h	>72k h	>72k h	>72k h
24 V	80 °C	30k h	39k h	61k h	>72k h	>72k h	>72k h

LLE FLEX 2500lm/m 9xx EXC3

Supply voltage	tp temperature	L90/F10	L90/F50	L80/F10	L80/F50	L70/F10	L70/F50
24 V	40 °C	41k h	52k h	>72k h	>72k h	>72k h	>72k h
24 V	45 °C	40k h	50k h	>72k h	>72k h	>72k h	>72k h
24 V	50 °C	38k h	48k h	>72k h	>72k h	>72k h	>72k h
24 V	55 °C	37k h	47k h	>72k h	>72k h	>72k h	>72k h
24 V	60 °C	35k h	45k h	71k h	>72k h	>72k h	>72k h
24 V	65 °C	34k h	43k h	68k h	>72k h	>72k h	>72k h
24 V	70 °C	32k h	42k h	66k h	>72k h	>72k h	>72k h
24 V	75 °C	31k h	41k h	63k h	>72k h	>72k h	>72k h
24 V	80 °C	30k h	39k h	60k h	>72k h	>72k h	>72k 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

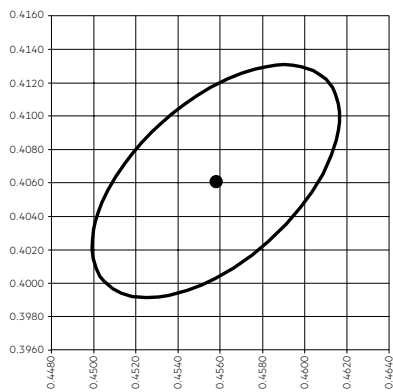
The specified colour coordinates are measured integral by a current impulse with typical values of module and a duration of 100 ms.

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

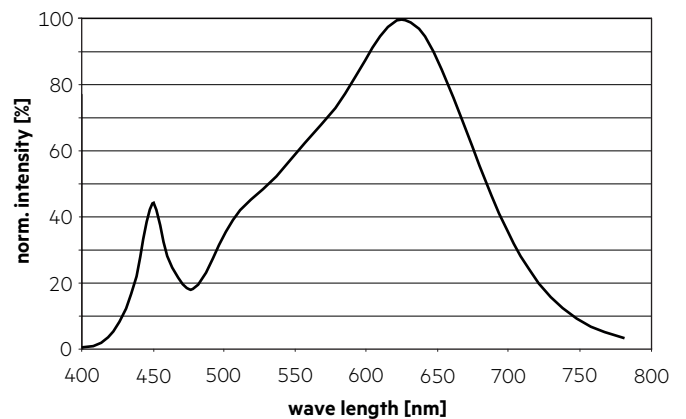
The measurement tolerance of the colour coordinates are ± 0.007 .

2,700 K

	x0	y0
Centre	0.4558	0.4061

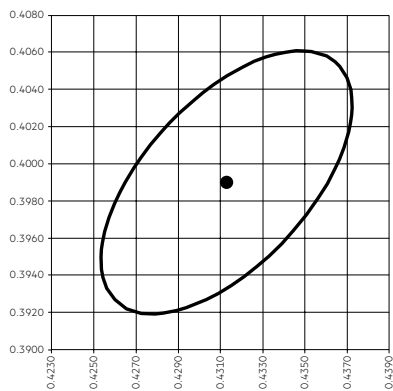


— MacAdam Ellipse: 3SDCM

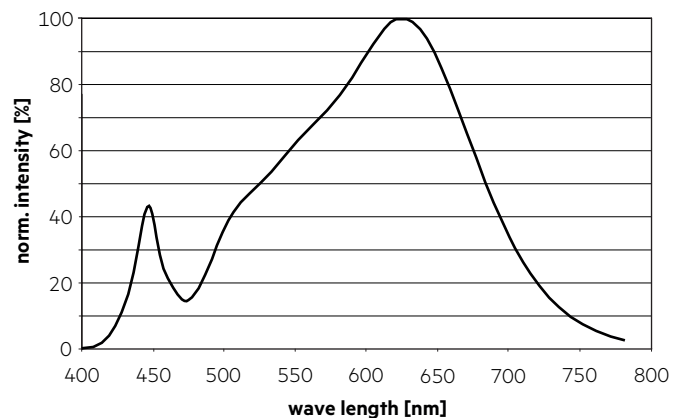


3,000 K

	x0	y0
Centre	0.4313	0.3990

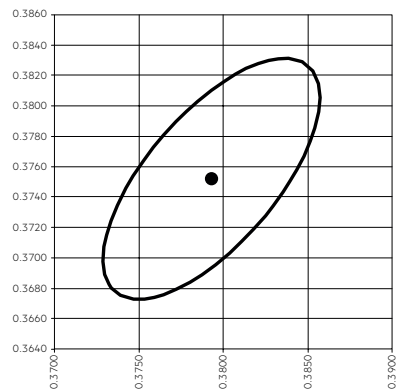


— MacAdam Ellipse: 3SDCM

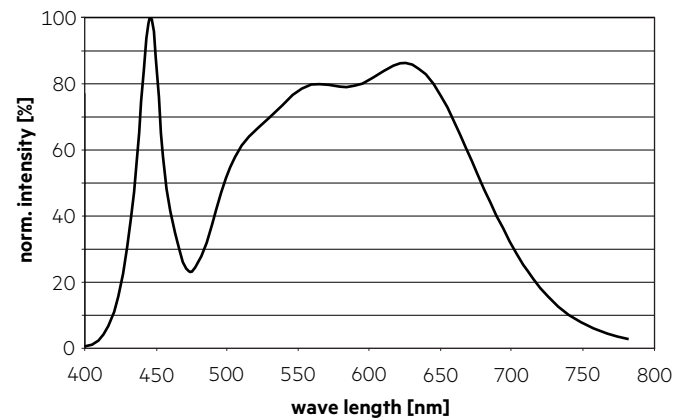


4,000 K

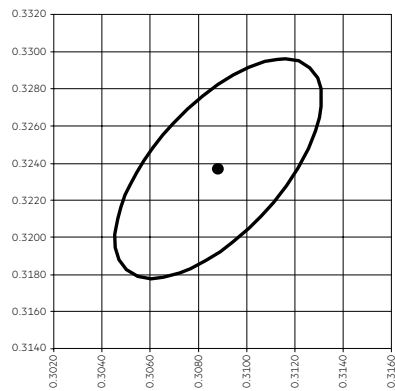
	x0	y0
Centre	0.3793	0.3752



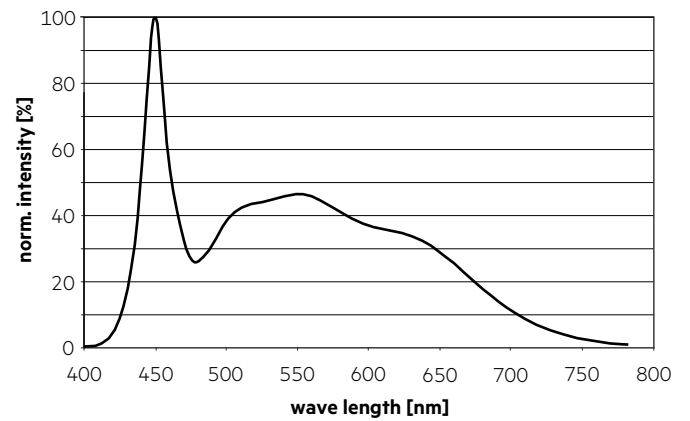
— MacAdam Ellipse: 3SDCM

**6,500 K**

	x0	y0
Centre	0.3088	0.3237

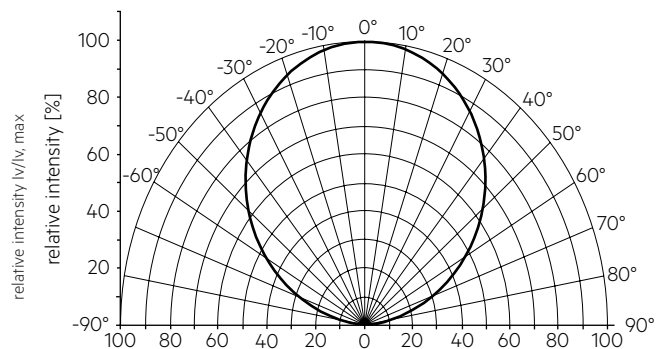


— MacAdam Ellipse: 3SDCM



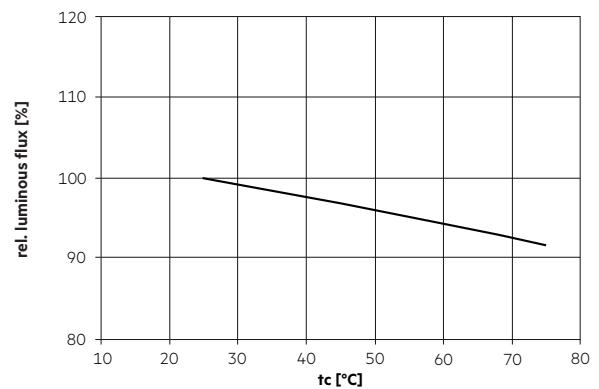
6.2 Light distribution

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



The colour temperature is measured 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. 5 cm) should be used.

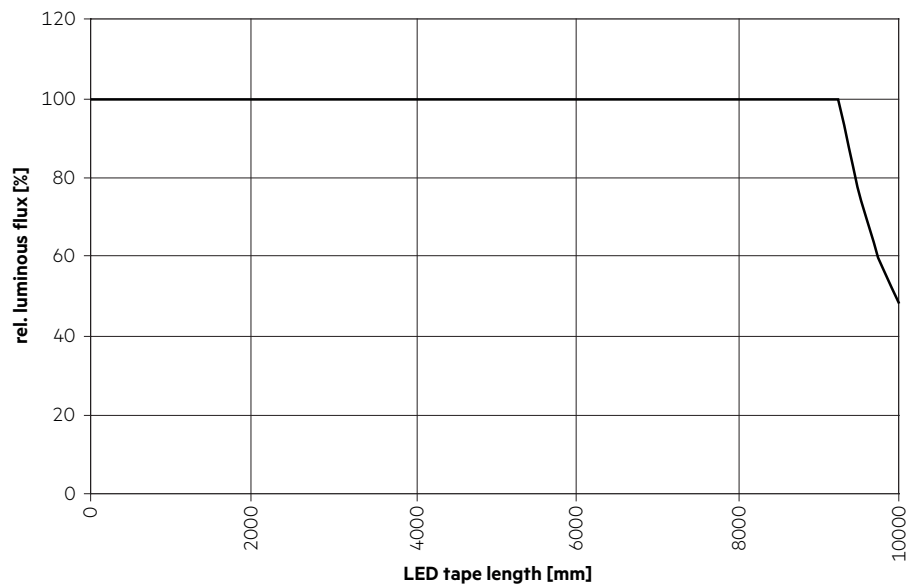
6.3 Relative luminous flux vs. tc temperature



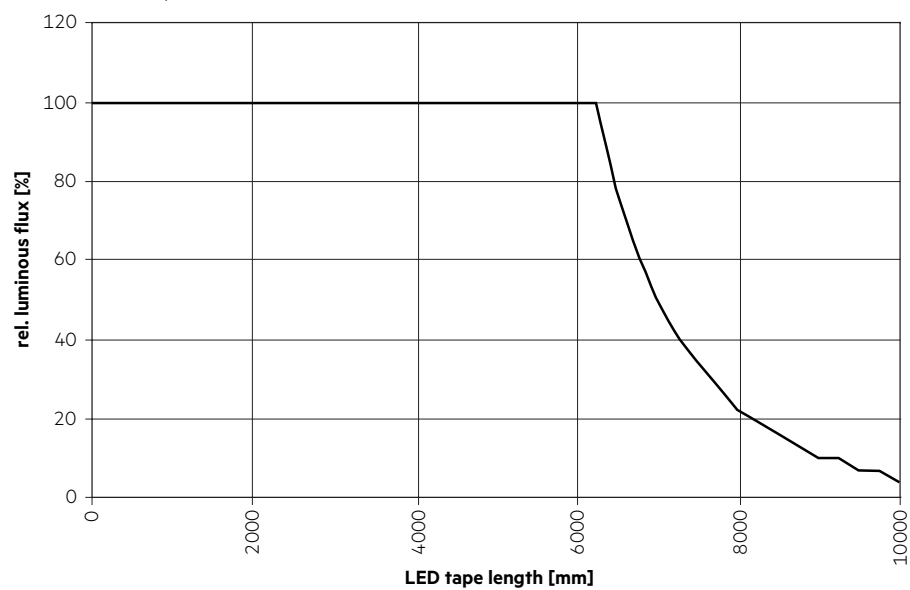
6.4 Relative luminous flux vs. LED tape length

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

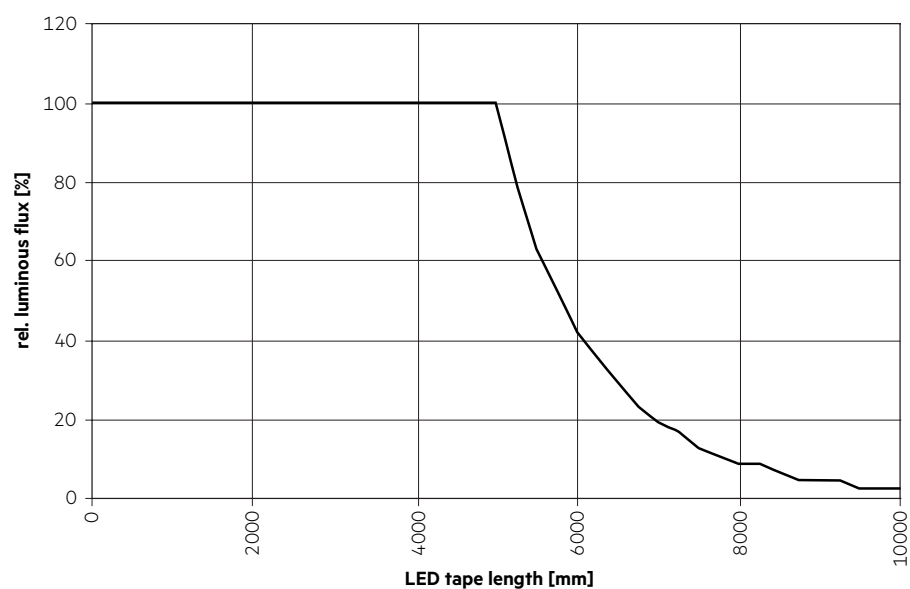
LLE FLEX 600lm/m EXC3:



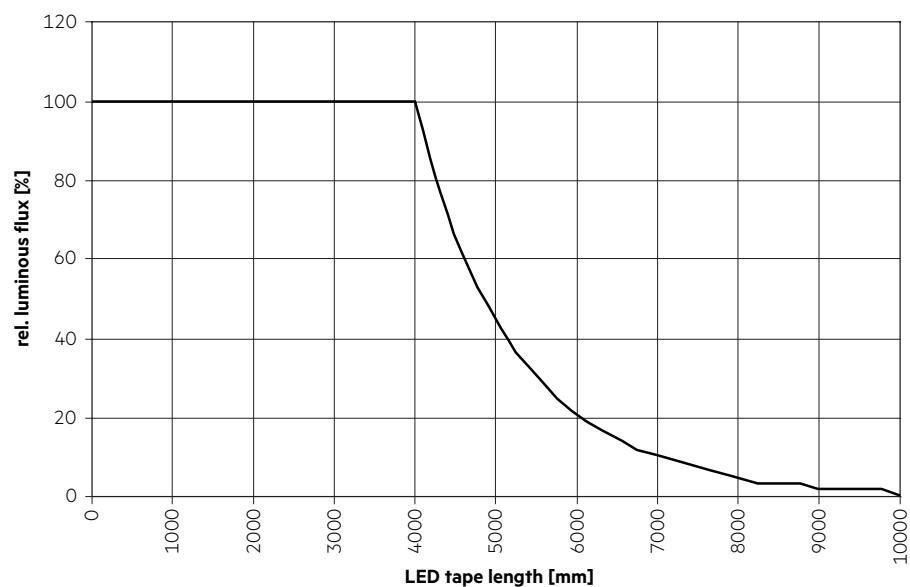
LLE FLEX 1200lm/m EXC3:



LLE FLEX 1800lm/m EXC3:



LLE FLEX 2500lm/m EXC3:



7. Miscellaneous

7.1 Additional information

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

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim.