TRIDONIC

Module LLE FLEX 8mm 48V EXC

Modules LLE FLEX excite

Product description

_ Dimmable 48 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 = 10 m
_ Long lifetime: 60,000 hours
_ 5 years guarantee (conditions at https://www.tridonic.com/manufacturer-guarantee-conditions)

Optical properties

_ Colour temperature 2,700, 3,000, 4,000 and 6,000 K with SDCM 3 ①
_ Useful luminous flux 2,630 lm/m at tp = 25 °C
_ Efficacy of the LED module 152 lm/W at tp = 25 °C
_ High colour rendering index CRI > 80 and CRI > 90 (on demand)

Mechanical properties

_ Extremely narrow pitch distance enables short distance to diffuser and outstanding homogeneity
_ High design freedom due to 6.25 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 ②

System solution

_ System solution in combination with Tridonic constant voltage LED driver (dimmable)

① Integral measurement over the complete module.
② For 10 m reel max. 2 solder joints.

Website

http://www.tridonic.com/28003881

Spotlights | Downlights | Linear | Area | Floor | Wall | Free-standing | Street | **Decorative** | High bay

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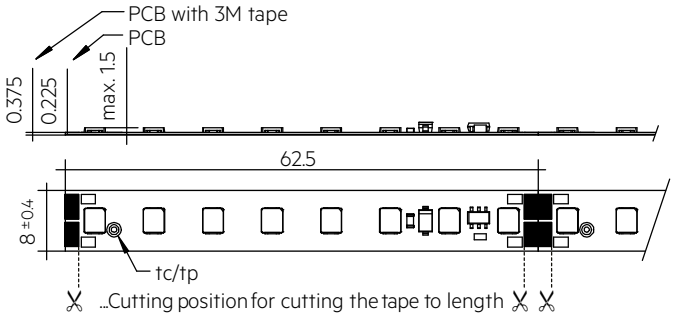


Ordering data

Type	Article number	Colour temperature	Packaging, carton	Weight per pc.
CRI 80				
LLE FLEX 8R10 48V 5W-600lm 827 EXC	**28003881**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 5W-600lm 830 EXC	**28003882**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 5W-600lm 840 EXC	**28003883**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 5W-600lm 860 EXC	**28003884**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 9W-1200lm 827 EXC	**28003885**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 9W-1200lm 830 EXC	**28003886**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 9W-1200lm 840 EXC	**28003887**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 9W-1200lm 860 EXC	**28003888**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 13W-1800lm 827 EXC	**28003889**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 13W-1800lm 830 EXC	**28003890**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 13W-1800lm 840 EXC	**28003891**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 13W-1800lm 860 EXC	**28003892**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 18W-2500lm 827 EXC	**28003893**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 18W-2500lm 830 EXC	**28003894**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 18W-2500lm 840 EXC	**28003895**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 18W-2500lm 860 EXC	**28003896**	6,000 K	1 pc(s).	0.153 kg
CRI 90 (articles available on demand)				
LLE FLEX 8R10 48V 6W-600lm 927 EXC	**28003905**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 6W-600lm 930 EXC	**28003906**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 6W-600lm 940 EXC	**28003907**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 6W-600lm 960 EXC	**28003908**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 11W-1200lm 927 EXC	**28003909**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 11W-1200lm 930 EXC	**28003910**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 11W-1200lm 940 EXC	**28003911**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 11W-1200lm 960 EXC	**28003912**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 16W-1800lm 927 EXC	**28003913**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 16W-1800lm 930 EXC	**28003914**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 16W-1800lm 940 EXC	**28003915**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 16W-1800lm 960 EXC	**28003916**	6,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 20W-2500lm 927 EXC	**28003917**	2,700 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 20W-2500lm 930 EXC	**28003918**	3,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 20W-2500lm 940 EXC	**28003919**	4,000 K	1 pc(s).	0.153 kg
LLE FLEX 8R10 48V 20W-2500lm 960 EXC	**28003920**	6,000 K	1 pc(s).	0.153 kg

Technical data

Beam characteristic	120°
Ambient temperature ta	-35 … +50 °C
tp rated	65 °C
tc	75 °C
Supply voltage DC	48 V
Supply voltage range DC ③	45 – 51 V
Insulation test voltage	0.5 kV
Colour tolerance	3 SDCM
ESD classification	Severity level 1
Risk group (IEC 62471)	RG1
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	60,000 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 °C④	Expected luminous flux at tp rated⑤	Typ. current consumption at tp rated	Power consumption Pon at tp = 25 °C⑥	Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Colour rendering index CRI at tp = 25 °C
CRI 80									
LLE FLEX 8R10 48V 5W-600lm 827 EXC	**28003881**	827/359	610 lm/m	570 lm/m	93 mA/m	4.5 W/m	137 lm/W	128 lm/W	>80
LLE FLEX 8R10 48V 5W-600lm 830 EXC	**28003882**	830/359	630 lm/m	590 lm/m	93 mA/m	4.5 W/m	141 lm/W	132 lm/W	>80
LLE FLEX 8R10 48V 5W-600lm 840 EXC	**28003883**	840/359	580 lm/m	540 lm/m	83 mA/m	4.0 W/m	146 lm/W	136 lm/W	>80
LLE FLEX 8R10 48V 5W-600lm 860 EXC	**28003884**	860/359	580 lm/m	540 lm/m	83 mA/m	4.0 W/m	146 lm/W	136 lm/W	>80
LLE FLEX 8R10 48V 9W-1200lm 827 EXC	**28003885**	827/359	1,240 lm/m	1,160 lm/m	186 mA/m	8.9 W/m	139 lm/W	130 lm/W	>80
LLE FLEX 8R10 48V 9W-1200lm 830 EXC	**28003886**	830/359	1,280 lm/m	1,190 lm/m	186 mA/m	8.9 W/m	144 lm/W	134 lm/W	>80
LLE FLEX 8R10 48V 9W-1200lm 840 EXC	**28003887**	840/359	1,210 lm/m	1,130 lm/m	168 mA/m	8.1 W/m	150 lm/W	140 lm/W	>80
LLE FLEX 8R10 48V 9W-1200lm 860 EXC	**28003888**	860/359	1,210 lm/m	1,130 lm/m	168 mA/m	8.1 W/m	150 lm/W	140 lm/W	>80
LLE FLEX 8R10 48V 13W-1800lm 827 EXC	**28003889**	827/359	1,840 lm/m	1,710 lm/m	272 mA/m	13.0 W/m	141 lm/W	131 lm/W	> >80
LLE FLEX 8R10 48V 13W-1800lm 830 EXC	**28003890**	830/359	1,900 lm/m	1,770 lm/m	272 mA/m	13.0 W/m	146 lm/W	136 lm/W	>80
LLE FLEX 8R10 48V 13W-1800lm 840 EXC	**28003891**	840/359	1,800 lm/m	1,680 lm/m	248 mA/m	11.9 W/m	151 lm/W	141 lm/W	>80
LLE FLEX 8R10 48V 13W-1800lm 860 EXC	**28003892**	860/359	1,800 lm/m	1,680 lm/m	248 mA/m	11.9 W/m	151 lm/W	141 lm/W	>80
LLE FLEX 8R10 48V 18W-2500lm 827 EXC	**28003893**	827/359	2,550 lm/m	2,380 lm/m	374 mA/m	18.0 W/m	142 lm/W	132 lm/W	>80
LLE FLEX 8R10 48V 18W-2500lm 830 EXC	**28003894**	830/359	2,630 lm/m	2,450 lm/m	374 mA/m	18.0 W/m	146 lm/W	136 lm/W	>80
LLE FLEX 8R10 48V 18W-2500lm 840 EXC	**28003895**	840/359	2,520 lm/m	2,350 lm/m	344 mA/m	16.5 W/m	152 lm/W	142 lm/W	>80
LLE FLEX 8R10 48V 18W-2500lm 860 EXC	**28003896**	860/359	2,520 lm/m	2,350 lm/m	344 mA/m	16.5 W/m	152 lm/W	142 lm/W	>80
CRI 90 (articles available on demand)									
LLE FLEX 8R10 48V 6W-600lm 927 EXC	**28003905**	927/359	640 lm/m	600 lm/m	114 mA/m	5.4 W/m	118 lm/W	111 lm/W	>90
LLE FLEX 8R10 48V 6W-600lm 930 EXC	**28003906**	930/359	620 lm/m	660 lm/m	114 mA/m	5.4 W/m	114 lm/W	122 lm/W	>90
LLE FLEX 8R10 48V 6W-600lm 940 EXC	**28003907**	940/359	610 lm/m	570 lm/m	99 mA/m	4.8 W/m	128 lm/W	120 lm/W	>90
LLE FLEX 8R10 48V 6W-600lm 960 EXC	**28003908**	960/359	600 lm/m	560 lm/m	99 mA/m	4.8 W/m	126 lm/W	118 lm/W	>90
LLE FLEX 8R10 48V 11W-1200lm 927 EXC	**28003909**	927/359	1,200 lm/m	1,120 lm/m	210 mA/m	10.0 W/m	120 lm/W	112 lm/W	> >90
LLE FLEX 8R10 48V 11W-1200lm 930 EXC	**28003910**	930/359	1,250 lm/m	1,160 lm/m	210 mA/m	10.0 W/m	124 lm/W	116 lm/W	> >90
LLE FLEX 8R10 48V 11W-1200lm 940 EXC	**28003911**	940/359	1,280 lm/m	1,190 lm/m	202 mA/m	9.7 W/m	133 lm/W	123 lm/W	> >90
LLE FLEX 8R10 48V 11W-1200lm 960 EXC	**28003912**	960/359	1,250 lm/m	1,160 lm/m	202 mA/m	9.7 W/m	129 lm/W	120 lm/W	> >90
LLE FLEX 8R10 48V 16W-1800lm 927 EXC	**28003913**	927/359	1,820 lm/m	1,700 lm/m	314 mA/m	15.0 W/m	121 lm/W	113 lm/W	>90
LLE FLEX 8R10 48V 16W-1800lm 930 EXC	**28003914**	927/359	1,820 lm/m	1,700 lm/m	314 mA/m	15.0 W/m	126 lm/W	117 lm/W	>90
LLE FLEX 8R10 48V 16W-1800lm 940 EXC	**28003915**	940/359	1,840 lm/m	1,720 lm/m	288 mA/m	13.8 W/m	133 lm/W	125 lm/W	>90
LLE FLEX 8R10 48V 16W-1800lm 960 EXC	**28003916**	960/359	1,810 lm/m	1,690 lm/m	288 mA/m	13.8 W/m	131 lm/W	122 lm/W	>90
LLE FLEX 8R10 48V 20W-2500lm 927 EXC	**28003917**	927/359	2,440 lm/m	2,270 lm/m	419 mA/m	20.1 W/m	121 lm/W	113 lm/W	>90
LLE FLEX 8R10 48V 20W-2500lm 930 EXC	**28003918**	930/359	2,530 lm/m	2,360 lm/m	419 mA/m	20.1 W/m	126 lm/W	117 lm/W	>90
LLE FLEX 8R10 48V 20W-2500lm 940 EXC	**28003919**	940/359	2,460 lm/m	2,290 lm/m	384 mA/m	18.5 W/m	133 lm/W	124 lm/W	>90
LLE FLEX 8R10 48V 20W-2500lm 960 EXC	**28003920**	960/359	2,420 lm/m	2,260 lm/m	384 mA/m	18.5 W/m	131 lm/W	122 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.

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

1st digit		2nd + 3rd digit	4th digit	5th digit	6th 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
CRI80			
LLE FLEX 8R10 48V 5W-600lm 827 EXC	2,700 K	E	5 kWh / 1,000 h
LLE FLEX 8R10 48V 5W-600lm 830 EXC	3,000 K	E	5 kWh / 1,000 h
LLE FLEX 8R10 48V 5W-600lm 840 EXC	4,000 K	E	4 kWh / 1,000 h
LLE FLEX 8R10 48V 5W-600lm 860 EXC	6,000 K	E	4 kWh / 1,000 h
LLE FLEX 8R10 48V 9W-1200lm 827 EXC	2,700 K	E	9 kWh / 1,000 h
LLE FLEX 8R10 48V 9W-1200lm 830 EXC	3,000 K	E	9 kWh / 1,000 h
LLE FLEX 8R10 48V 9W-1200lm 840 EXC	4,000 K	D	9 kWh / 1,000 h
LLE FLEX 8R10 48V 9W-1200lm 860 EXC	6,000 K	D	9 kWh / 1,000 h
LLE FLEX 8R10 48V 13W-1800lm 827 EXC	2,700 K	E	14 kWh / 1,000 h
LLE FLEX 8R10 48V 13W-1800lm 830 EXC	3,000 K	E	14 kWh / 1,000 h
LLE FLEX 8R10 48V 13W-1800lm 840 EXC	4,000 K	D	12 kWh / 1,000 h
LLE FLEX 8R10 48V 13W-1800lm 860 EXC	6,000 K	D	12 kWh / 1,000 h
LLE FLEX 8R10 48V 18W-2500lm 827 EXC	2,700 K	E	18 kWh / 1,000 h
LLE FLEX 8R10 48V 18W-2500lm 830 EXC	3,000 K	D	18 kWh / 1,000 h
LLE FLEX 8R10 48V 18W-2500lm 840 EXC	4,000 K	D	17 kWh / 1,000 h
LLE FLEX 8R10 48V 18W-2500lm 860 EXC	6,000 K	D	17 kWh / 1,000 h
CRI90			
LLE FLEX 8R10 48V 6W-600lm 927 EXC	2,700 K	F	6 kWh / 1,000 h
LLE FLEX 8R10 48V 6W-600lm 930 EXC	3,000 K	F	6 kWh / 1,000 h
LLE FLEX 8R10 48V 6W-600lm 940 EXC	4,000 K	E	5 kWh / 1,000 h
LLE FLEX 8R10 48V 6W-600lm 960 EXC	6,000 K	E	5 kWh / 1,000 h
LLE FLEX 8R10 48V 11W-1200lm 927 EXC	2,700 K	F	11 kWh / 1,000 h
LLE FLEX 8R10 48V 11W-1200lm 930 EXC	3,000 K	E	11 kWh / 1,000 h
LLE FLEX 8R10 48V 11W-1200lm 940 EXC	4,000 K	E	10 kWh / 1,000 h
LLE FLEX 8R10 48V 11W-1200lm 960 EXC	6,000 K	E	10 kWh / 1,000 h
LLE FLEX 8R10 48V 16W-1800lm 927 EXC	2,700 K	E	15 kWh / 1,000 h
LLE FLEX 8R10 48V 16W-1800lm 930 EXC	3,000 K	E	15 kWh / 1,000 h
LLE FLEX 8R10 48V 16W-1800lm 940 EXC	4,000 K	E	14 kWh / 1,000 h
LLE FLEX 8R10 48V 16W-1800lm 960 EXC	6,000 K	E	14 kWh / 1,000 h
LLE FLEX 8R10 48V 20W-2500lm 927 EXC	2,700 K	E	21 kWh / 1,000 h
LLE FLEX 8R10 48V 20W-2500lm 930 EXC	3,000 K	E	21 kWh / 1,000 h
LLE FLEX 8R10 48V 20W-2500lm 940 EXC	4,000 K	E	19 kWh / 1,000 h
LLE FLEX 8R10 48V 20W-2500lm 960 EXC	6,000 K	E	19 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

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 8xx EXC

ta	tp	$R_{th, hs-a}$ ①	Cooling area ①
25 °C	65 °C	328.34 K/W	self cooling
35 °C	65 °C	246.22 K/W	self cooling
40 °C	65 °C	205.16 K/W	self cooling
45 °C	65 °C	164.10 K/W	self cooling
50 °C	65 °C	123.04 K/W	5 cm²

LLE FLEX 1200lm/m 8xx EXC

ta	tp	$R_{th, hs-a}$ ①	Cooling area ①
25 °C	65 °C	169.30 K/W	self cooling
35 °C	65 °C	126.94 K/W	5 cm²
40 °C	65 °C	105.76 K/W	6 cm²
45 °C	65 °C	84.58 K/W	8 cm²
50 °C	65 °C	63.40 K/W	11 cm²

LLE FLEX 1800lm/m 8xx EXC

ta	tp	$R_{th, hs-a}$ ①	Cooling area ①
25 °C	65 °C	117.82 K/W	6 cm²
35 °C	65 °C	88.33 K/W	8 cm²
40 °C	65 °C	73.58 K/W	9 cm²
45 °C	65 °C	58.84 K/W	11 cm²
50 °C	65 °C	44.09 K/W	15 cm²

LLE FLEX 2500lm/m 8xx EXC

ta	tp	$R_{th, hs-a}$ ①	Cooling area ①
25 °C	65 °C	88.12 K/W	8 cm²
35 °C	65 °C	66.06 K/W	10 cm²
40 °C	65 °C	55.02 K/W	12 cm²
45 °C	65 °C	43.99 K/W	15 cm²
50 °C	65 °C	32.96 K/W	20 cm²

LLE FLEX 600lm/m 9xx EXC

ta	tp	$R_{th, hs-a}$ [1]	Cooling area [1]
25 °C	65 °C	224.61 K/W	self cooling
35 °C	65 °C	168.42 K/W	self cooling
40 °C	65 °C	140.33 K/W	self cooling
45 °C	65 °C	112.24 K/W	6 cm²
50 °C	65 °C	84.14 K/W	8 cm²

LLE FLEX 1200lm/m 9xx EXC

ta	tp	$R_{th, hs-a}$ [1]	Cooling area [1]
25 °C	65 °C	122.82 K/W	5 cm²
35 °C	65 °C	92.08 K/W	7 cm²
40 °C	65 °C	76.71 K/W	9 cm²
45 °C	65 °C	61.34 K/W	11 cm²
50 °C	65 °C	45.97 K/W	15 cm²

LLE FLEX 1800lm/m 9xx EXC

ta	tp	$R_{th, hs-a}$ [1]	Cooling area [1]
25 °C	65 °C	83.21 K/W	8 cm²
35 °C	65 °C	62.37 K/W	11 cm²
40 °C	65 °C	51.95 K/W	13 cm²
45 °C	65 °C	41.54 K/W	16 cm²
50 °C	65 °C	31.12 K/W	21 cm²

LLE FLEX 2500lm/m 9xx EXC

ta	tp	$R_{th, hs-a}$ [1]	Cooling area [1]
25 °C	65 °C	62.20 K/W	11 cm²
35 °C	65 °C	46.62 K/W	14 cm²
40 °C	65 °C	38.82 K/W	17 cm²
45 °C	65 °C	31.03 K/W	21 cm²
50 °C	65 °C	23.24 K/W	29 cm²

[1] Values for a single segment of the LLE FLEX (62.5 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 62.5 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.

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 for LLE FLEX EXC

LLE FLEX 600lm/m xxx EXC

Supply voltage	tp temperature	L90/B10	L90/B50	L80/B10	L80/B50	L70/B10	L70/B50
48 V	40 °C	35k h	53k h	>60k h	>60k h	>60k h	>60k h
48 V	45 °C	34k h	51k h	>60k h	>60k h	>60k h	>60k h
48 V	50 °C	33k h	49k h	>60k h	>60k h	>60k h	>60k h
48 V	55 °C	33k h	47k h	>60k h	>60k h	>60k h	>60k h
48 V	60 °C	32k h	45k h	>60k h	>60k h	>60k h	>60k h
48 V	65 °C	32k h	44k h	>60k h	>60k h	>60k h	>60k h
48 V	70 °C	31k h	42k h	>60k h	>60k h	>60k h	>60k h
48 V	75 °C	31k h	41k h	>60k h	>60k h	>60k h	>60k h

LLE FLEX 1200lm/m xxx EXC
LLE FLEX 1800lm/m xxx EXC
LLE FLEX 2500lm/m xxx EXC

Supply voltage	tp temperature	L90/B10	L90/B50	L80/B10	L80/B50	L70/B10	L70/B50
48 V	40 °C	34k h	52k h	>60k h	>60k h	>60k h	>60k h
48 V	45 °C	34k h	50k h	>60k h	>60k h	>60k h	>60k h
48 V	50 °C	33k h	48k h	>60k h	>60k h	>60k h	>60k h
48 V	55 °C	33k h	47k h	>60k h	>60k h	>60k h	>60k h
48 V	60 °C	32k h	45k h	>60k h	>60k h	>60k h	>60k h
48 V	65 °C	32k h	43k h	>60k h	>60k h	>60k h	>60k h
48 V	70 °C	31k h	42k h	>60k h	>60k h	>60k h	>60k h
48 V	75 °C	31k h	40k h	>60k h	>60k h	>60k h	>60k h

L0C10 > 60k h. At tp rated, based on 10 switching cycles per day.

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

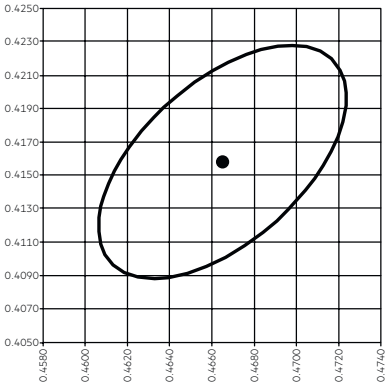
6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

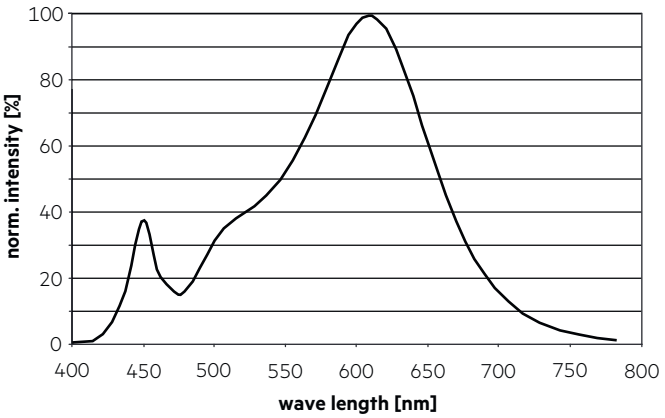
The specified colour coordinates are measured integral by a current impulse with typical values of module and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.007.

2,700 K – CRI80

	x0	y0
Centre	0.4665	0.4158

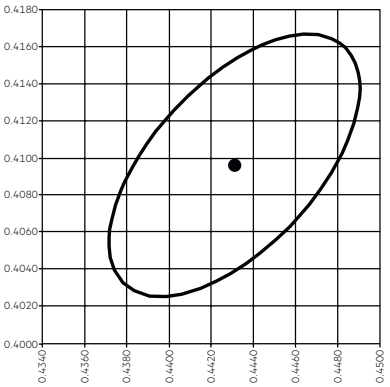


MacAdam Ellipse: 3SDCM

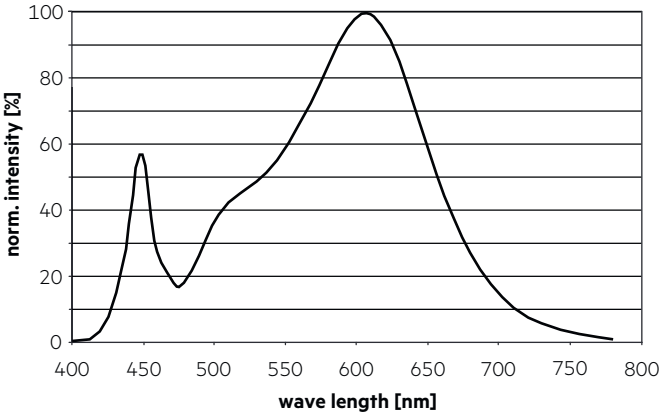


3,000 K – CRI80

	x0	y0
Centre	0.4431	0.4096

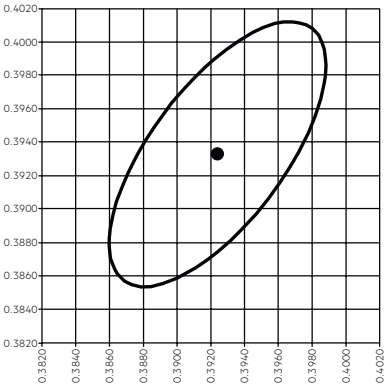


MacAdam Ellipse: 3SDCM

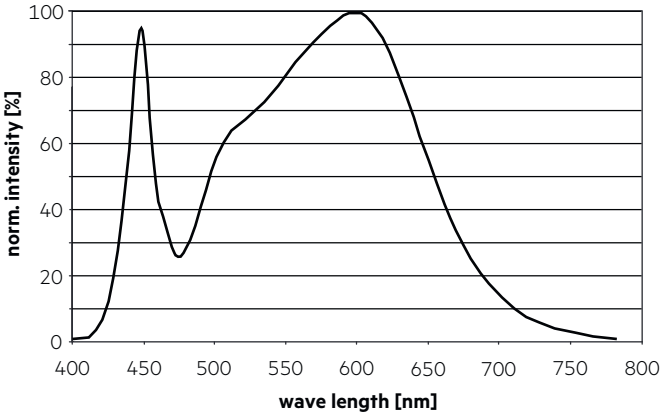


4,000 K – CRI80

	x0	y0
Center	0.3924	0.3933

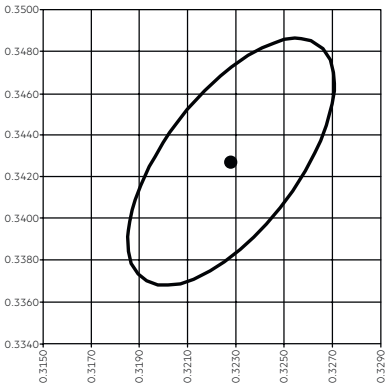


MacAdam Ellipse: 3SDCM

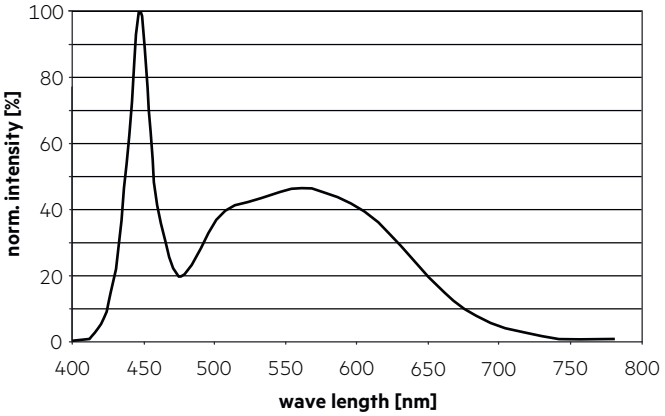


6,000 K – CRI80

	x0	y0
Center	0.3228	0.3427

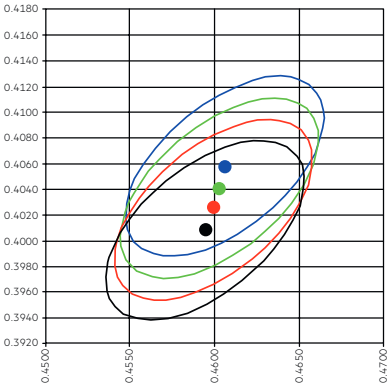


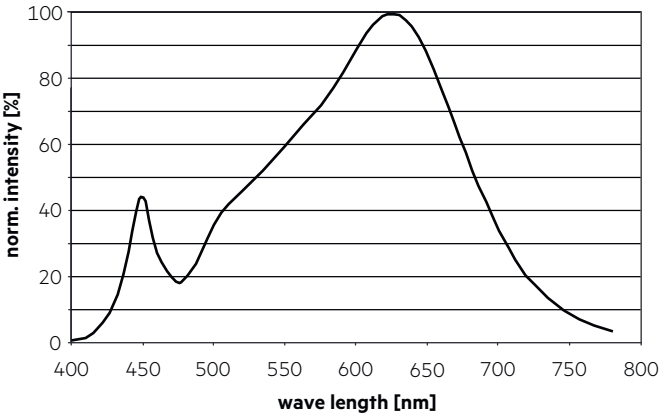
MacAdam Ellipse: 3SDCM



2,700 K – CRI90

	x0	y0
Centre 600 lm/m	0.4594	0.4009
Centre 1,200 lm/m	0.4599	0.4024
Centre 1,800 lm/m	0.4603	0.4041
Centre 2,500 lm/m	0.4606	0.4058

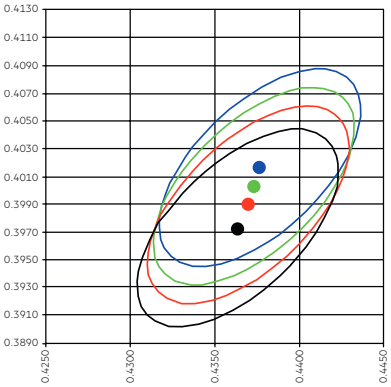


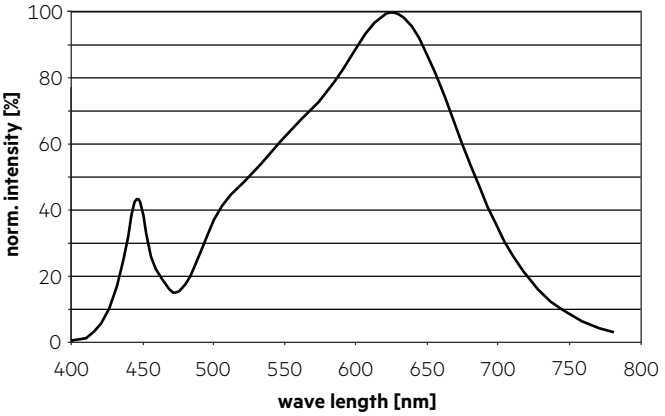


MacAdam Ellipse: 3SDCM

3,000 K – CRI90

	x0	y0
Centre 600 lm/m	0.4363	0.3973
Centre 1,200 lm/m	0.4370	0.3990
Centre 1,800 lm/m	0.4373	0.4003
Centre 2,500 lm/m	0.4376	0.4016

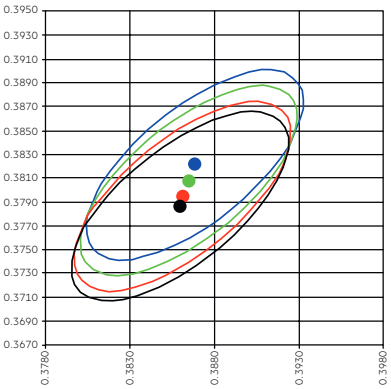




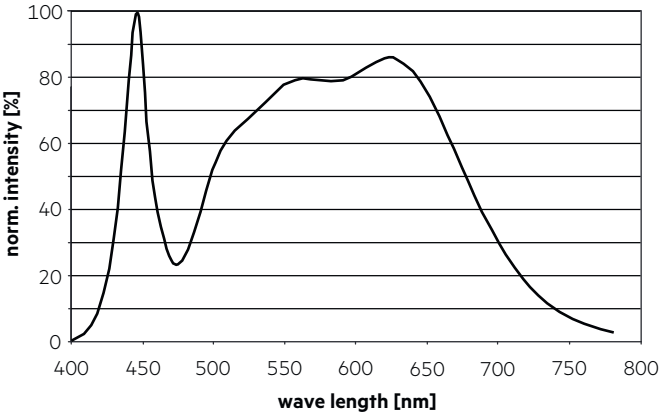
MacAdam Ellipse: 3SDCM

4,000 K – CRI90

	x0	y0
Centre 600 lm/m	0.3859	0.3787
Centre 1,200 lm/m	0.3861	0.3795
Centre 1,800 lm/m	0.3865	0.3808
Centre 2,500 lm/m	0.3869	0.3821

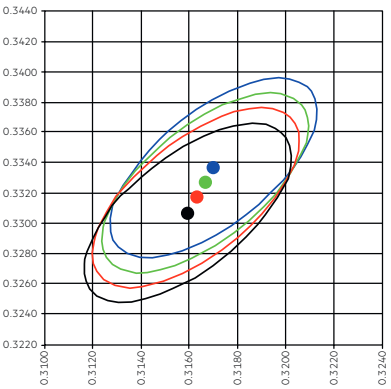


MacAdam Ellipse: 3SDCM

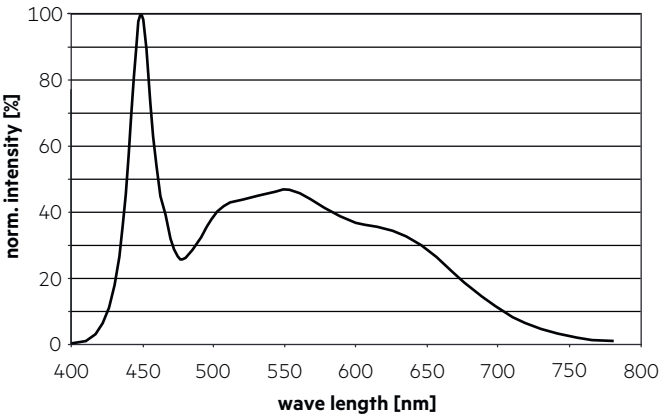


6,000 K – CRI90

	x0	y0
Centre 600 lm/m	0.3159	0.3307
Centre 1,200 lm/m	0.3163	0.3317
Centre 1,800 lm/m	0.3167	0.3327
Centre 2,500 lm/m	0.3170	0.3337

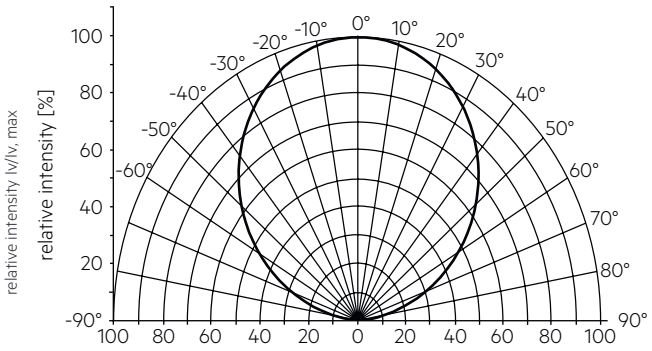


MacAdam Ellipse: 3SDCM



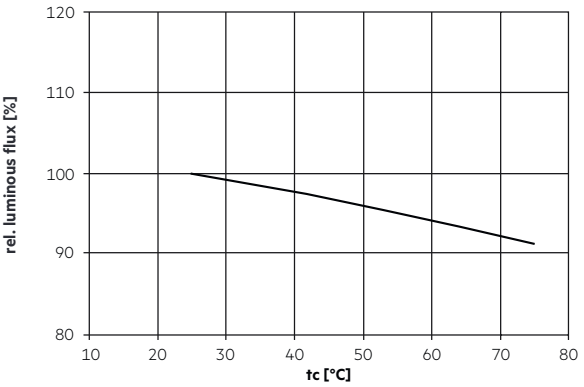
6.2 Light distribution

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.

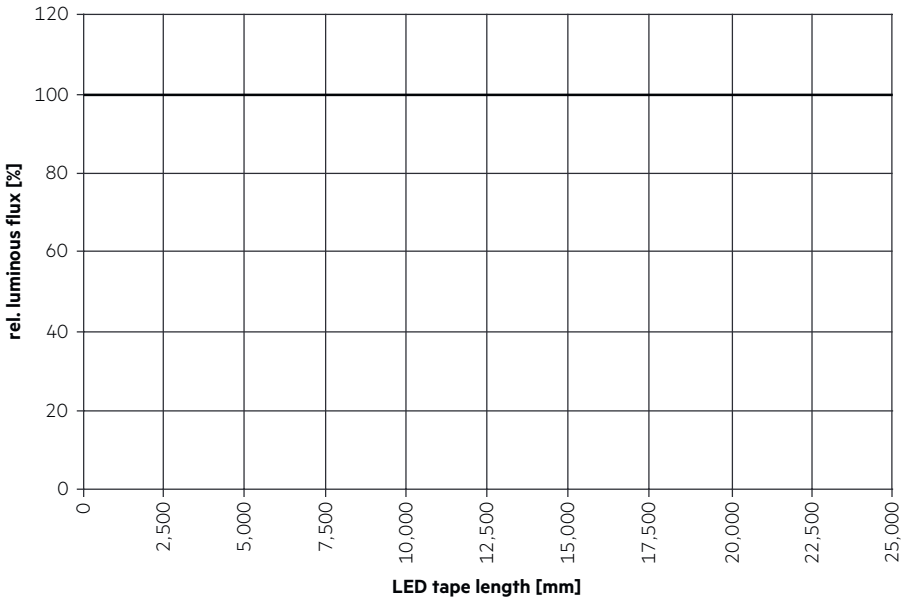
6.3 Relative luminous flux vs. tc temperature



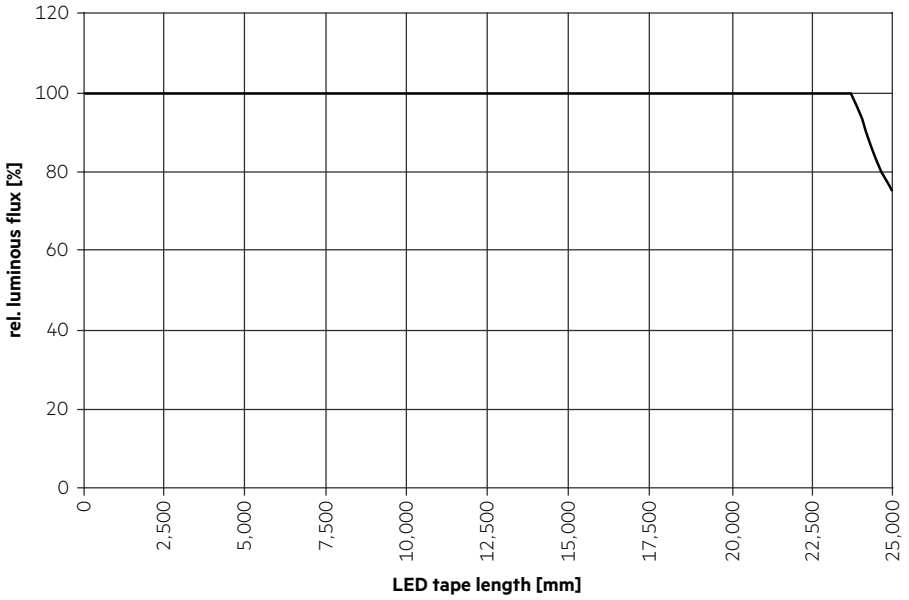
6.4 Relative luminous flux vs. LED tape length

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

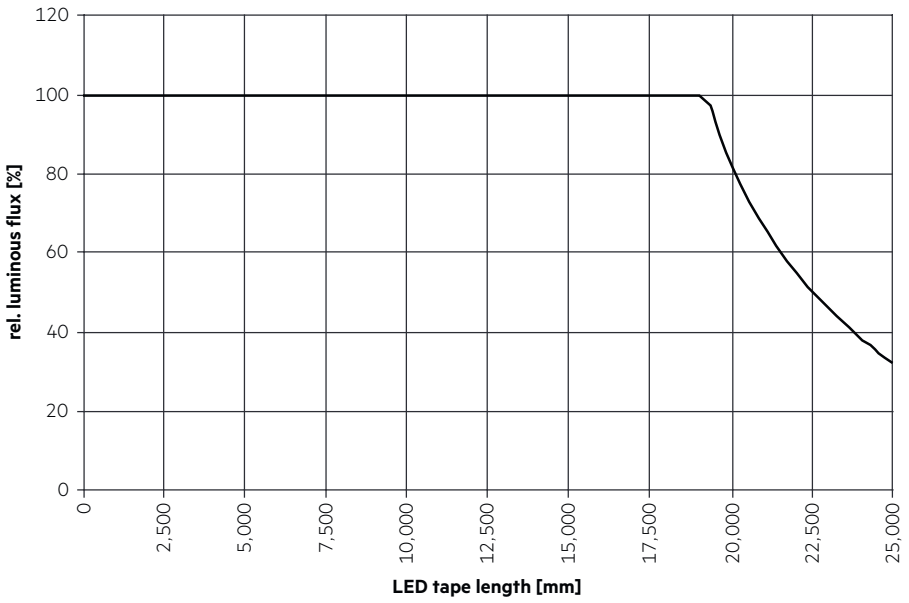
LLE FLEX 600lm/m 8xx EXC:



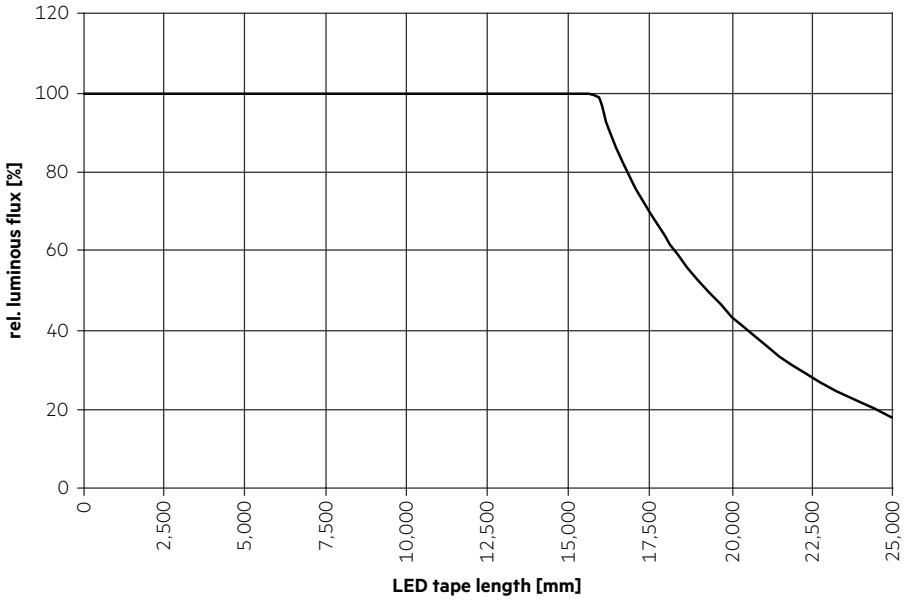
LLE FLEX 1200lm/m 8xx EXC:



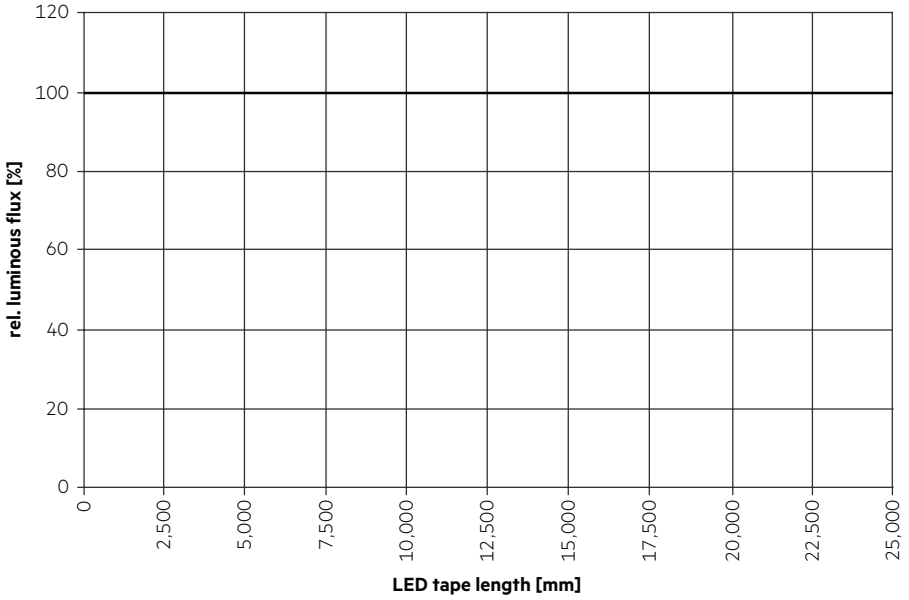
LLE FLEX 1800lm/m 8xx EXC:



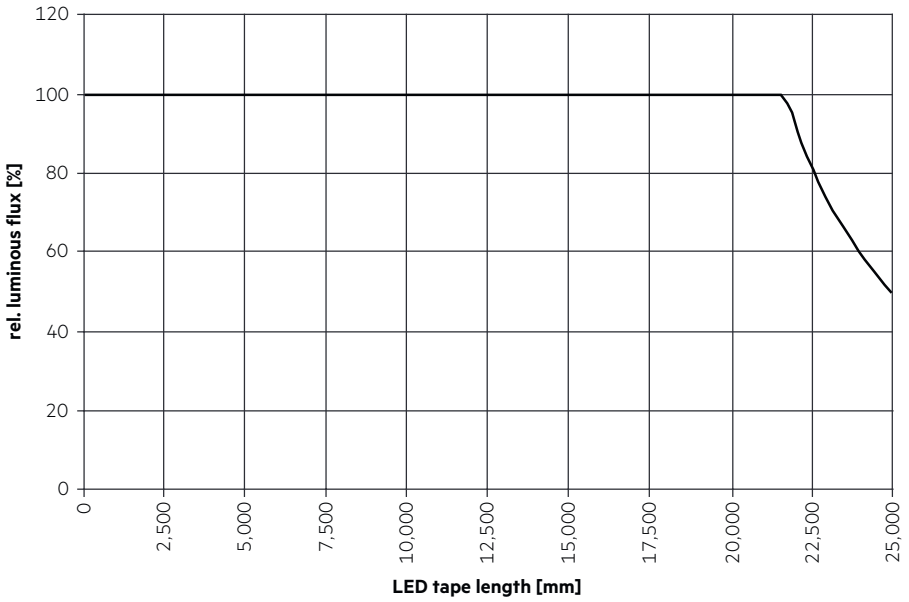
LLE FLEX 2500lm/m 8xx EXC:



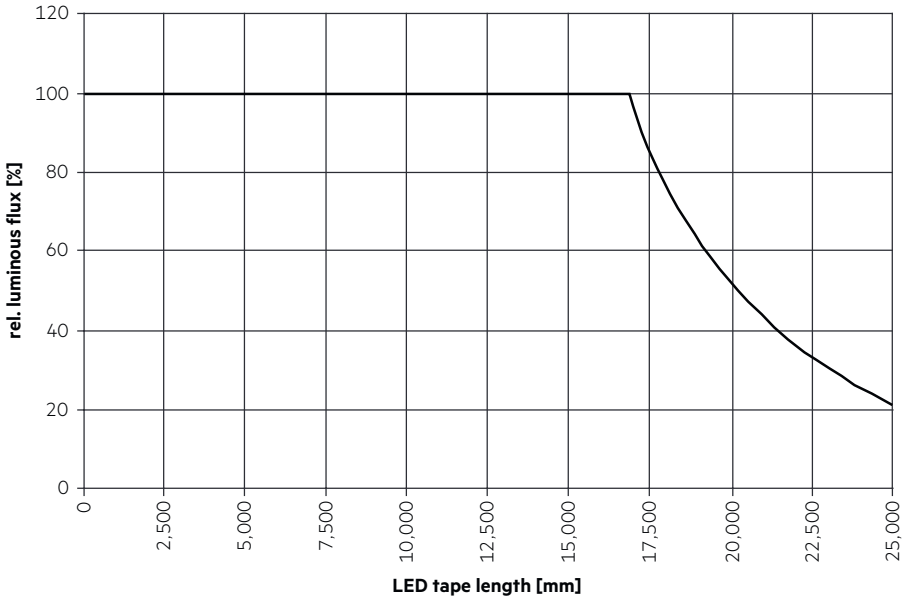
LLE FLEX 600lm/m 9xx EXC:



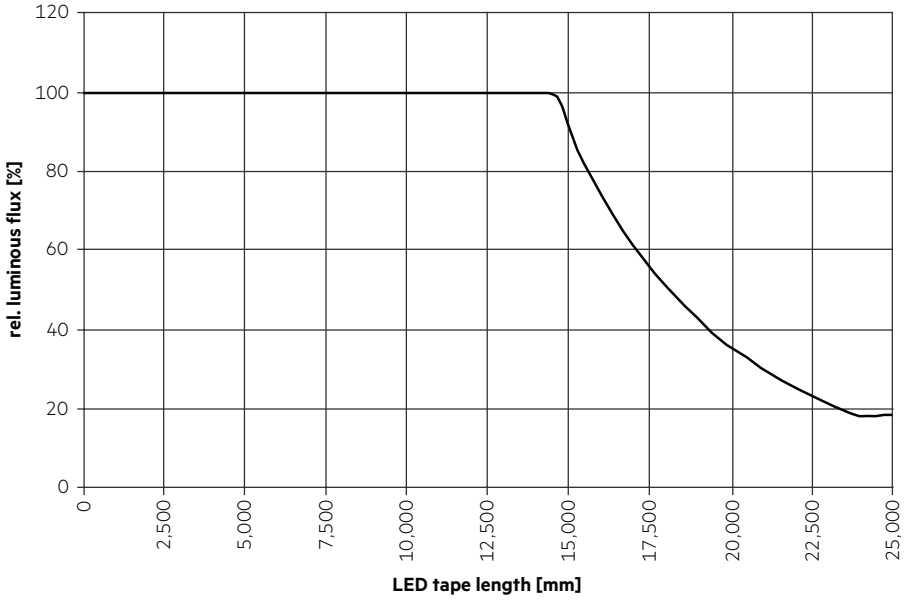
LLE FLEX 1200lm/m 9xx EXC:



LLE FLEX 1800lm/m 9xx EXC:



LLE FLEX 2500lm/m 9xx EXC:



7. Miscellaneous

7.1 Additional information

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

Lifetime declarations are informative and represent no warranty claim.