



Module LLE 16mm 1250lm CRI90 HV ADV6

Modules LLE advanced

Product description

- Ideal for compact linear luminaires designs
- Homogenous illumination thanks to small package distance
- 2 terminals for serial wiring
- 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
- Min. order quantity LLE 16x70mm QTY4: 36 pcs. The LLE 16x70mm QTY4 module contains 4 single 16x70mm modules which have to be separated.
- HE ... High Efficiency, NM ... Nominal Mode, HO ... High Output
- Long lifetime: 72,000 hours
- 5 years guarantee (conditions at www.tridonic.com)

Optical properties

- Colour temperatures 2,700 K, 3,000 K, 3,500 K and 4,000 K
- Useful luminous flux 1,041 lm at Irated and tp = 25 °C
- Efficacy of the LED module 173 lm/W at Irated and tp = 25 °C
- High colour rendering index CRI > 90
- High colour consistency (MacAdam 3)[®]
- Small luminous flux tolerances

Mechanical properties

- Module dimension 16 x 70 mm, 24 x 140 mm, 16 x 280 mm and 16 x 560 mm
- Simple installation (e.g. clips or screws)

System solution

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

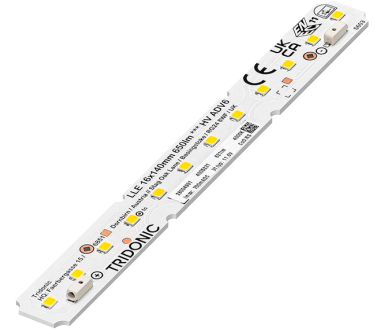


Standards, page 9

Colour temperatures and tolerances, page 15



LLE 16x70mm 325lm HV ADV6



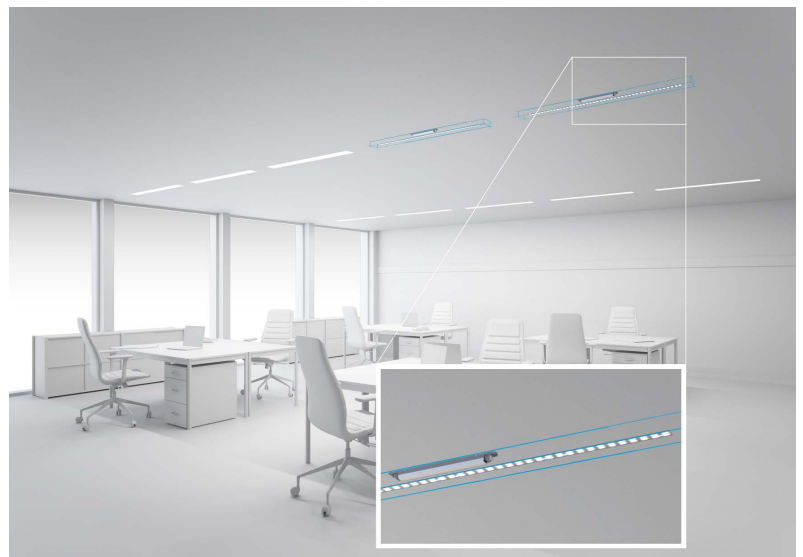
LLE 16x140mm 650lm HV ADV6



LLE 16x280mm 1250lm HV ADV6



LLE 16x560mm 2400lm HV ADV6





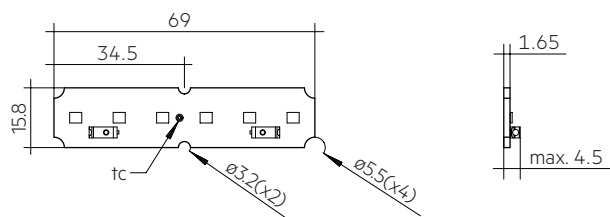
Module LLE 16mm 1250lm CRI90 HV ADV6

Modules LLE advanced

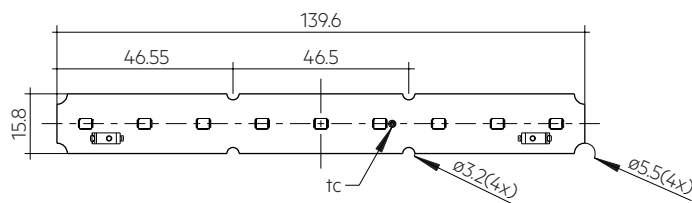
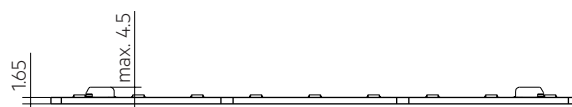
Technical data

Colour consistency ^①	3 SDCM
ESD classification	severity level 2
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	72,000 h
Guarantee	5 year(s)

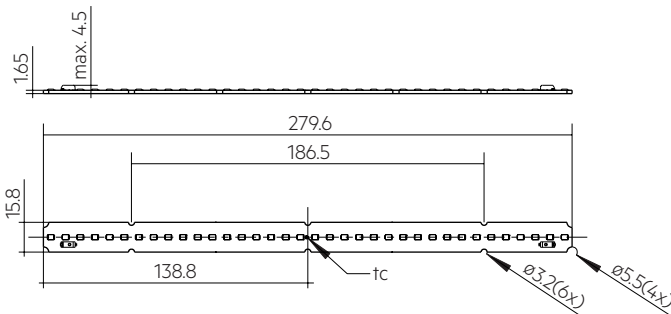
^① Integral measurement over the complete module.



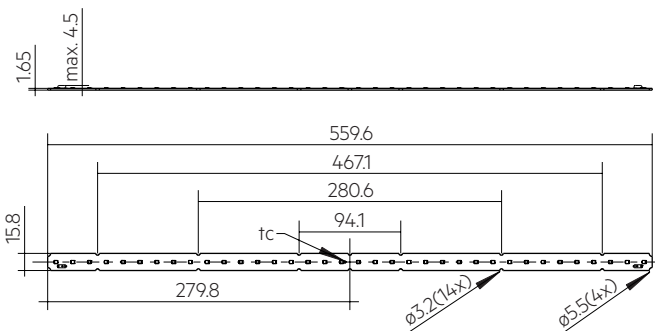
LLE 16x70mm 325lm HV ADV6



LLE 16x140mm 650lm HV ADV6



LLE 16x280mm 1250lm HV ADV6



LLE 16x560mm 2400lm HV ADV6

Module LLE 16mm 1250lm CRI90 HV ADV6
Modules LLE advanced

Ordering data

Type	Article number	Article status	Packaging carton	Weight per pc.
LLE 16x70mm 325lm 930 HV ADV6 QTY4	28004982	Standard	144 pc(s).	0.017 kg
LLE 16x70mm 325lm 940 HV ADV6 QTY4	28004983	Standard	144 pc(s).	0.017 kg
LLE 16x140mm 650lm 927 HV ADV6	28004994	Standard	144 pc(s).	0.007 kg
LLE 16x140mm 650lm 930 HV ADV6	28004995	Standard	144 pc(s).	0.007 kg
LLE 16x140mm 650lm 935 HV ADV6	28004996	Standard	144 pc(s).	0.007 kg
LLE 16x140mm 650lm 940 HV ADV6	28004997	Standard	144 pc(s).	0.007 kg
LLE 16x280mm 1250lm 927 HV ADV6	28005006	Standard	144 pc(s).	0.014 kg
LLE 16x280mm 1250lm 930 HV ADV6	28005007	Standard	144 pc(s).	0.014 kg
LLE 16x280mm 1250lm 935 HV ADV6	28005008	Standard	144 pc(s).	0.014 kg
LLE 16x280mm 1250lm 940 HV ADV6	28005009	Standard	144 pc(s).	0.014 kg
LLE 16x560mm 2400lm 927 HV ADV6	28005016	Standard	144 pc(s).	0.028 kg
LLE 16x560mm 2400lm 930 HV ADV6	28005017	Standard	144 pc(s).	0.028 kg
LLE 16x560mm 2400lm 935 HV ADV6	28005018	Standard	144 pc(s).	0.028 kg
LLE 16x560mm 2400lm 940 HV ADV6	28005019	Standard	144 pc(s).	0.028 kg

Photometric data

Type	Colour temperature	Photometric Code ^①	Useful luminous flux at tp = 25 °C ^②	Luminous flux at tp rated ^③			Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Beam characteristic	Colour rendering index CRI
				Min.	Typ.	Max.				
Operating mode HE										
LLE 16x70mm 325lm 930 HV ADV6 QTY4	3,000 K	930/359	–	80 lm	89 lm	98 lm	–	169 lm/W	360°	>90
LLE 16x70mm 325lm 940 HV ADV6 QTY4	4,000 K	940/359	–	83 lm	93 lm	102 lm	–	175 lm/W	360°	>90
LLE 16x140mm 650lm 927 HV ADV6	2,700 K	927/359	–	155 lm	173 lm	190 lm	–	164 lm/W	360°	>90
LLE 16x140mm 650lm 930 HV ADV6	3,000 K	930/359	–	160 lm	178 lm	196 lm	–	169 lm/W	360°	>90
LLE 16x140mm 650lm 935 HV ADV6	3,500 K	935/359	–	165 lm	183 lm	201 lm	–	173 lm/W	360°	>90
LLE 16x140mm 650lm 940 HV ADV6	4,000 K	940/359	–	167 lm	185 lm	204 lm	–	175 lm/W	360°	>90
LLE 16x280mm 1250lm 927 HV ADV6	2,700 K	927/359	–	311 lm	346 lm	380 lm	–	164 lm/W	360°	>90
LLE 16x280mm 1250lm 930 HV ADV6	3,000 K	930/359	–	320 lm	356 lm	392 lm	–	169 lm/W	360°	>90
LLE 16x280mm 1250lm 935 HV ADV6	3,500 K	935/359	–	329 lm	366 lm	402 lm	–	173 lm/W	360°	>90
LLE 16x280mm 1250lm 940 HV ADV6	4,000 K	940/359	–	333 lm	370 lm	407 lm	–	175 lm/W	360°	>90
LLE 16x560mm 2400lm 927 HV ADV6	2,700 K	927/359	–	622 lm	691 lm	760 lm	–	164 lm/W	360°	>90
LLE 16x560mm 2400lm 930 HV ADV6	3,000 K	930/359	–	641 lm	712 lm	784 lm	–	169 lm/W	360°	>90
LLE 16x560mm 2400lm 935 HV ADV6	3,500 K	935/359	–	658 lm	731 lm	804 lm	–	173 lm/W	360°	>90
LLE 16x560mm 2400lm 940 HV ADV6	4,000 K	940/359	–	666 lm	741 lm	815 lm	–	175 lm/W	360°	>90
Operating mode NM										
LLE 16x70mm 325lm 930 HV ADV6 QTY4	3,000 K	930/359	250 lm	216 lm	240 lm	264 lm	165 lm/W	160 lm/W	360°	>90
LLE 16x70mm 325lm 940 HV ADV6 QTY4	4,000 K	940/359	260 lm	225 lm	250 lm	275 lm	172 lm/W	166 lm/W	360°	>90
LLE 16x140mm 650lm 927 HV ADV6	2,700 K	927/359	486 lm	419 lm	466 lm	513 lm	160 lm/W	155 lm/W	360°	>90
LLE 16x140mm 650lm 930 HV ADV6	3,000 K	930/359	501 lm	432 lm	480 lm	529 lm	165 lm/W	160 lm/W	360°	>90
LLE 16x140mm 650lm 935 HV ADV6	3,500 K	935/359	514 lm	444 lm	493 lm	543 lm	169 lm/W	164 lm/W	360°	>90
LLE 16x140mm 650lm 940 HV ADV6	4,000 K	940/359	520 lm	449 lm	499 lm	549 lm	172 lm/W	166 lm/W	360°	>90
LLE 16x280mm 1250lm 927 HV ADV6	2,700 K	927/359	971 lm	839 lm	932 lm	1,025 lm	160 lm/W	155 lm/W	360°	>90
LLE 16x280mm 1250lm 930 HV ADV6	3,000 K	930/359	1,001 lm	865 lm	961 lm	1,057 lm	165 lm/W	160 lm/W	360°	>90
LLE 16x280mm 1250lm 935 HV ADV6	3,500 K	935/359	1,028 lm	888 lm	986 lm	1,085 lm	169 lm/W	164 lm/W	360°	>90
LLE 16x280mm 1250lm 940 HV ADV6	4,000 K	940/359	1,041 lm	899 lm	999 lm	1,099 lm	172 lm/W	166 lm/W	360°	>90
LLE 16x560mm 2400lm 927 HV ADV6	2,700 K	927/359	1,942 lm	1,678 lm	1,864 lm	2,051 lm	160 lm/W	155 lm/W	360°	>90
LLE 16x560mm 2400lm 930 HV ADV6	3,000 K	930/359	2,002 lm	1,729 lm	1,921 lm	2,114 lm	165 lm/W	160 lm/W	360°	>90
LLE 16x560mm 2400lm 935 HV ADV6	3,500 K	935/359	2,055 lm	1,775 lm	1,972 lm	2,170 lm	169 lm/W	164 lm/W	360°	>90
LLE 16x560mm 2400lm 940 HV ADV6	4,000 K	940/359	2,082 lm	1,798 lm	1,998 lm	2,198 lm	172 lm/W	166 lm/W	360°	>90
Operating mode HO										
LLE 16x70mm 325lm 930 HV ADV6 QTY4	3,000 K	930/359	–	449 lm	499 lm	549 lm	–	145 lm/W	360°	>90
LLE 16x70mm 325lm 940 HV ADV6 QTY4	4,000 K	940/359	–	467 lm	519 lm	571 lm	–	151 lm/W	360°	>90
LLE 16x140mm 650lm 927 HV ADV6	2,700 K	927/359	–	871 lm	968 lm	1,065 lm	–	141 lm/W	360°	>90
LLE 16x140mm 650lm 930 HV ADV6	3,000 K	930/359	–	898 lm	998 lm	1,098 lm	–	145 lm/W	360°	>90
LLE 16x140mm 650lm 935 HV ADV6	3,500 K	935/359	–	922 lm	1,024 lm	1,127 lm	–	149 lm/W	360°	>90
LLE 16x140mm 650lm 940 HV ADV6	4,000 K	940/359	–	934 lm	1,038 lm	1,141 lm	–	151 lm/W	360°	>90
LLE 16x280mm 1250lm 927 HV ADV6	2,700 K	927/359	–	1,743 lm	1,936 lm	2,130 lm	–	141 lm/W	360°	>90
LLE 16x280mm 1250lm 930 HV ADV6	3,000 K	930/359	–	1,796 lm	1,996 lm	2,195 lm	–	145 lm/W	360°	>90
LLE 16x280mm 1250lm 935 HV ADV6	3,500 K	935/359	–	1,844 lm	2,049 lm	2,254 lm	–	149 lm/W	360°	>90
LLE 16x280mm 1250lm 940 HV ADV6	4,000 K	940/359	–	1,868 lm	2,075 lm	2,283 lm	–	151 lm/W	360°	>90
LLE 16x560mm 2400lm 927 HV ADV6	2,700 K	927/359	–	3,485 lm	3,873 lm	4,260 lm	–	141 lm/W	360°	>90
LLE 16x560mm 2400lm 930 HV ADV6	3,000 K	930/359	–	3,592 lm	3,991 lm	4,391 lm	–	145 lm/W	360°	>90
LLE 16x560mm 2400lm 935 HV ADV6	3,500 K	935/359	–	3,687 lm	4,097 lm	4,507 lm	–	149 lm/W	360°	>90
LLE 16x560mm 2400lm 940 HV ADV6	4,000 K	940/359	–	3,735 lm	4,150 lm	4,565 lm	–	151 lm/W	360°	>90

^① The detailed explanation, see data sheet section 1.1.

^② Tolerance of useful light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %.

^③ Measurement uncertainty ± 10 %. Based on calculation.

Electrical data

Type	Forward current	Min. forward voltage at tp rated	Typ. forward voltage at tp rated	Max. forward voltage at tp = 25 °C	Power consumption Pon at tp = 25 °C ^①	Energy classification	Energy consumption	Type of light source
Operating mode HE								
LLE 16x70mm 325lm 930 HV ADV6 QTY4	100 mA	5.0 V	5.3 V	5.5 V	–	–	–	–
LLE 16x70mm 325lm 940 HV ADV6 QTY4	100 mA	5.0 V	5.3 V	5.5 V	–	–	–	–
LLE 16x140mm 650lm 927 HV ADV6	100 mA	10.1 V	10.6 V	11.0 V	–	–	–	–
LLE 16x140mm 650lm 930 HV ADV6	100 mA	10.1 V	10.6 V	11.0 V	–	–	–	–
LLE 16x140mm 650lm 935 HV ADV6	100 mA	10.1 V	10.6 V	11.0 V	–	–	–	–
LLE 16x140mm 650lm 940 HV ADV6	100 mA	10.1 V	10.6 V	11.0 V	–	–	–	–
LLE 16x280mm 1250lm 927 HV ADV6	100 mA	20.2 V	21.1 V	22.0 V	–	–	–	–
LLE 16x280mm 1250lm 930 HV ADV6	100 mA	20.2 V	21.1 V	22.0 V	–	–	–	–
LLE 16x280mm 1250lm 935 HV ADV6	100 mA	20.2 V	21.1 V	22.0 V	–	–	–	–
LLE 16x280mm 1250lm 940 HV ADV6	100 mA	20.2 V	21.1 V	22.0 V	–	–	–	–
LLE 16x560mm 2400lm 927 HV ADV6	100 mA	40.3 V	42.2 V	43.9 V	–	–	–	–
LLE 16x560mm 2400lm 930 HV ADV6	100 mA	40.3 V	42.2 V	43.9 V	–	–	–	–
LLE 16x560mm 2400lm 935 HV ADV6	100 mA	40.3 V	42.2 V	43.9 V	–	–	–	–
LLE 16x560mm 2400lm 940 HV ADV6	100 mA	40.3 V	42.2 V	43.9 V	–	–	–	–
Operating mode NM								
LLE 16x70mm 325lm 930 HV ADV6 QTY4	275 mA	5.2 V	5.5 V	5.7 V	1.5 W	D	2 kWh / 1,000 h	non-directional
LLE 16x70mm 325lm 940 HV ADV6 QTY4	275 mA	5.2 V	5.5 V	5.7 V	1.5 W	C	2 kWh / 1,000 h	non-directional
LLE 16x140mm 650lm 927 HV ADV6	275 mA	10.4 V	10.9 V	11.4 V	3.0 W	D	4 kWh / 1,000 h	non-directional
LLE 16x140mm 650lm 930 HV ADV6	275 mA	10.4 V	10.9 V	11.4 V	3.0 W	D	4 kWh / 1,000 h	non-directional
LLE 16x140mm 650lm 935 HV ADV6	275 mA	10.4 V	10.9 V	11.4 V	3.0 W	D	4 kWh / 1,000 h	non-directional
LLE 16x140mm 650lm 940 HV ADV6	275 mA	10.4 V	10.9 V	11.4 V	3.0 W	C	4 kWh / 1,000 h	non-directional
LLE 16x280mm 1250lm 927 HV ADV6	275 mA	20.9 V	21.9 V	22.7 V	6.1 W	D	7 kWh / 1,000 h	non-directional
LLE 16x280mm 1250lm 930 HV ADV6	275 mA	20.9 V	21.9 V	22.7 V	6.1 W	D	7 kWh / 1,000 h	non-directional
LLE 16x280mm 1250lm 935 HV ADV6	275 mA	20.9 V	21.9 V	22.7 V	6.1 W	D	7 kWh / 1,000 h	non-directional
LLE 16x280mm 1250lm 940 HV ADV6	275 mA	20.9 V	21.9 V	22.7 V	6.1 W	D	7 kWh / 1,000 h	non-directional
LLE 16x560mm 2400lm 927 HV ADV6	275 mA	41.8 V	43.7 V	45.4 V	12.1 W	D	13 kWh / 1,000 h	non-directional
LLE 16x560mm 2400lm 930 HV ADV6	275 mA	41.8 V	43.7 V	45.4 V	12.1 W	D	13 kWh / 1,000 h	non-directional
LLE 16x560mm 2400lm 935 HV ADV6	275 mA	41.8 V	43.7 V	45.4 V	12.1 W	D	13 kWh / 1,000 h	non-directional
LLE 16x560mm 2400lm 940 HV ADV6	275 mA	41.8 V	43.7 V	45.4 V	12.1 W	D	13 kWh / 1,000 h	non-directional
Operating mode HO								
LLE 16x70mm 325lm 930 HV ADV6 QTY4	600 mA	5.5 V	5.7 V	5.9 V	–	–	–	–
LLE 16x70mm 325lm 940 HV ADV6 QTY4	600 mA	5.5 V	5.7 V	5.9 V	–	–	–	–
LLE 16x140mm 650lm 927 HV ADV6	600 mA	11.0 V	11.4 V	11.9 V	–	–	–	–
LLE 16x140mm 650lm 930 HV ADV6	600 mA	11.0 V	11.4 V	11.9 V	–	–	–	–
LLE 16x140mm 650lm 935 HV ADV6	600 mA	11.0 V	11.4 V	11.9 V	–	–	–	–
LLE 16x140mm 650lm 940 HV ADV6	600 mA	11.0 V	11.4 V	11.9 V	–	–	–	–
LLE 16x280mm 1250lm 927 HV ADV6	600 mA	21.9 V	22.9 V	23.8 V	–	–	–	–
LLE 16x280mm 1250lm 930 HV ADV6	600 mA	21.9 V	22.9 V	23.8 V	–	–	–	–
LLE 16x280mm 1250lm 935 HV ADV6	600 mA	21.9 V	22.9 V	23.8 V	–	–	–	–
LLE 16x280mm 1250lm 940 HV ADV6	600 mA	21.9 V	22.9 V	23.8 V	–	–	–	–
LLE 16x560mm 2400lm 927 HV ADV6	600 mA	43.9 V	45.8 V	47.5 V	–	–	–	–
LLE 16x560mm 2400lm 930 HV ADV6	600 mA	43.9 V	45.8 V	47.5 V	–	–	–	–
LLE 16x560mm 2400lm 935 HV ADV6	600 mA	43.9 V	45.8 V	47.5 V	–	–	–	–
LLE 16x560mm 2400lm 940 HV ADV6	600 mA	43.9 V	45.8 V	47.5 V	–	–	–	–

^① Tolerance of power consumption Pon ± 10 %. Measurement uncertainty ± 5 %.

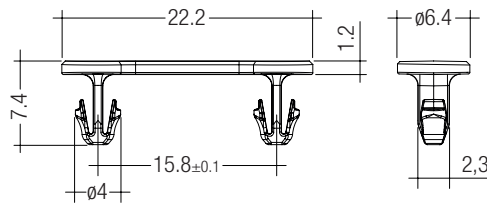
Specific technical data

Type	I _{rated}	I _{max}	Max. permissible LF current ripple	Max. permissible peak current / max. pulse width	Max. working voltage for insulation ^①	Electrical strength	t _a	t _p rated	t _c
LLE 16x70mm 325lm 930 HV ADV6 QTY4	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x70mm 325lm 940 HV ADV6 QTY4	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x140mm 650lm 927 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x140mm 650lm 930 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x140mm 650lm 935 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x140mm 650lm 940 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x280mm 1250lm 927 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x280mm 1250lm 930 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x280mm 1250lm 935 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x280mm 1250lm 940 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x560mm 2400lm 927 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x560mm 2400lm 930 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x560mm 2400lm 935 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C
LLE 16x560mm 2400lm 940 HV ADV6	275 mA	700 mA	800 mA	1,350 mA / 10 ms	440 V	1.88 kV	-40 ... +65 °C	50 °C	85 °C

^① If mounted with M3 screws with 6 mm head diameter and plastic washer.

Product description

- Clip for fixation for LLE16
- Fast snap on mounting (for sheet thickness 0.5 – 1.0 mm)
- For drilling hole 3 mm
- Clip made of polycarbonate
- Minimum sales quantity 200 pcs.

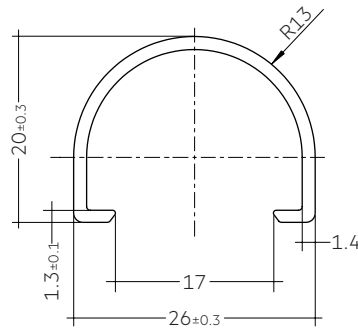


Ordering data

Type	Article number	Colour	Packaging bag	Weight per pc.
ACL BRIDGE LLE16 PUSH-FIX	28001035	White	200 pc(s).	0.001 kg

Product description

- LINEAR COVER for LLE 16
- Protection against direct touch for non-SELV applications
(recommendation: use all fixing points)^①
- Fast snap on mounting on to LLE 16 with clips or plastic washers
- High transmission: transparent 94 %, semi-transparent 87 %, diffuse 76 %
- Linear lense made of PMMA
- Tolerances LINEAR COVER: + 10 mm for 1,600 / 1,200 mm length
(ends raw)



Ordering data

Type	Article number	Colour	Length	Packaging carton	Weight per pc.
ACL LINEAR COVER 16x1600mm FROSTED	28000950	Semi-transparent	1,600 mm	24 pc(s).	0.147 kg
ACL LINEAR COVER 16x1200mm FROSTED	28002827	Semi-transparent	1,200 mm	24 pc(s).	0.117 kg
ACL LINEAR COVER 16x1600mm DIFFUSE	28000951	Diffuse	1,600 mm	24 pc(s).	0.147 kg
ACL LINEAR COVER 16x1200mm DIFFUSE	28002828	Diffuse	1,200 mm	24 pc(s).	0.117 kg

^① Ends must be covered by the luminaire construction.

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

1.2 Risk group

Forward current	Risk group (IEC 62471)
≤ 280 mA	RG0
> 280 – 700 mA (Imax)	RG1

1.3 Energy classification

Type	Colour temperature	Forward current	Energy classification	Energy consumption
LLE 16x70mm 325lm 930 HV ADV6 QTY4	3,000 K	275 mA	D	2 kWh / 1,000 h
LLE 16x70mm 325lm 940 HV ADV6 QTY4	4,000 K	275 mA	C	2 kWh / 1,000 h
LLE 16x140mm 650lm 927 HV ADV6	2,700 K	275 mA	D	4 kWh / 1,000 h
LLE 16x140mm 650lm 930 HV ADV6	3,000 K	275 mA	D	4 kWh / 1,000 h
LLE 16x140mm 650lm 935 HV ADV6	3,500 K	275 mA	D	4 kWh / 1,000 h
LLE 16x140mm 650lm 940 HV ADV6	4,000 K	275 mA	C	4 kWh / 1,000 h
LLE 16x280mm 1250lm 927 HV ADV6	2,700 K	275 mA	D	7 kWh / 1,000 h
LLE 16x280mm 1250lm 930 HV ADV6	3,000 K	275 mA	D	7 kWh / 1,000 h
LLE 16x280mm 1250lm 935 HV ADV6	3,500 K	275 mA	D	7 kWh / 1,000 h
LLE 16x280mm 1250lm 940 HV ADV6	4,000 K	275 mA	D	7 kWh / 1,000 h
LLE 16x560mm 2400lm 927 HV ADV6	2,700 K	275 mA	D	13 kWh / 1,000 h
LLE 16x560mm 2400lm 930 HV ADV6	3,000 K	275 mA	D	13 kWh / 1,000 h
LLE 16x560mm 2400lm 935 HV ADV6	3,500 K	275 mA	C	13 kWh / 1,000 h
LLE 16x560mm 2400lm 940 HV ADV6	4,000 K	275 mA	D	13 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 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
---------------------	----------------

Operation only in non condensing environment.

Humidity during processing of the module should be between 30 to 70 %.

2.3 Heat sink values

LLE 16x70mm 325lm ADV6

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	50 °C	275 mA	37.75 K/W	18 cm²
25 °C	50 °C	600 mA	9.59 K/W	70 cm²
35 °C	50 °C	275 mA	20.94 K/W	32 cm²
35 °C	50 °C	600 mA	4.04 K/W	165 cm²
40 °C	50 °C	275 mA	12.53 K/W	53 cm²
40 °C	50 °C	600 mA	1.26 K/W	528 cm²
45 °C	50 °C	275 mA	4.12 K/W	162 cm²

LLE 16x140mm 650lm ADV6

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	50 °C	275 mA	18.88 K/W	35 cm²
25 °C	50 °C	600 mA	4.79 K/W	139 cm²
35 °C	50 °C	275 mA	10.47 K/W	64 cm²
35 °C	50 °C	600 mA	2.02 K/W	330 cm²
40 °C	50 °C	275 mA	6.26 K/W	106 cm²
40 °C	50 °C	600 mA	0.63 K/W	1056 cm²
45 °C	50 °C	275 mA	2.06 K/W	324 cm²

LLE 16x280mm 1250lm ADV6

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	50 °C	275 mA	9.44 K/W	71 cm²
25 °C	50 °C	600 mA	2.40 K/W	278 cm²
35 °C	50 °C	275 mA	5.23 K/W	127 cm²
35 °C	50 °C	600 mA	1.01 K/W	661 cm²
40 °C	50 °C	275 mA	3.13 K/W	213 cm²
40 °C	50 °C	600 mA	0.32 K/W	2,111 cm²
45 °C	50 °C	275 mA	1.03 K/W	647 cm²

LLE 16x560mm 2400lm ADV6

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	50 °C	275 mA	4.72 K/W	141 cm ²
25 °C	50 °C	600 mA	1.20 K/W	556 cm ²
35 °C	50 °C	275 mA	2.62 K/W	255 cm ²
35 °C	50 °C	600 mA	0.50 K/W	1.321 cm ²
40 °C	50 °C	275 mA	1.57 K/W	426 cm ²
40 °C	50 °C	600 mA	0.16 K/W	4,223 cm ²
45 °C	50 °C	275 mA	0.52 K/W	1,294 cm ²

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.

For applications with a small distance between LED module and lens or operating currents higher than 500 mA, screw mounting is recommended to ensure a reliable thermal connection between LED module and cooling surface.

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.

The LLE module is designed for serial wiring.

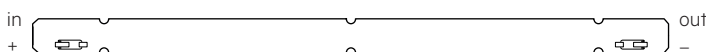
LLE can be operated either from SELV LED drivers or from LED drivers with LV output voltage.



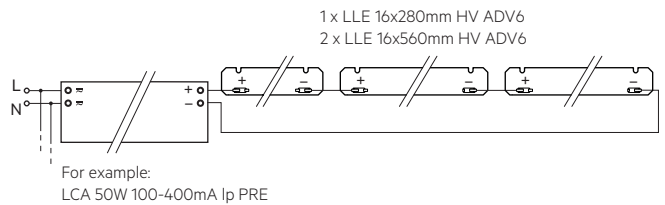
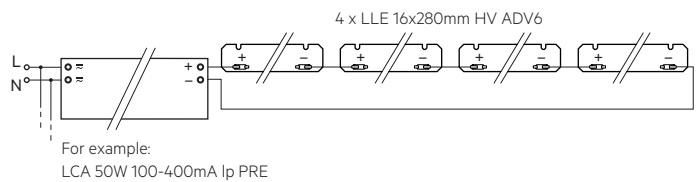
LLE are basic insulated up to 440 V (if mounted with M3 screws with head diameter 6 mm in combination with plastic washers) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED driver (also against earth) is above 440 V, an additional 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



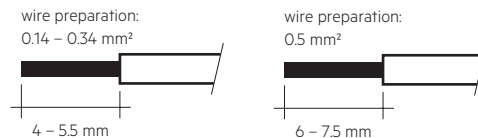
Wiring examples for serial wiring



3.3 Wiring type and cross section

For wiring use solid wire from 0.14 to 0.5 mm².

No reconnection with smaller diameters possible if used with >0.34 mm².



To remove the wires use a suitable tool (Wago 206-859) or through twist and pull.

3.4 Mounting instruction



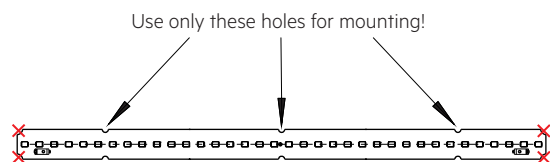
None of the components of the LLE (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5 Nm.

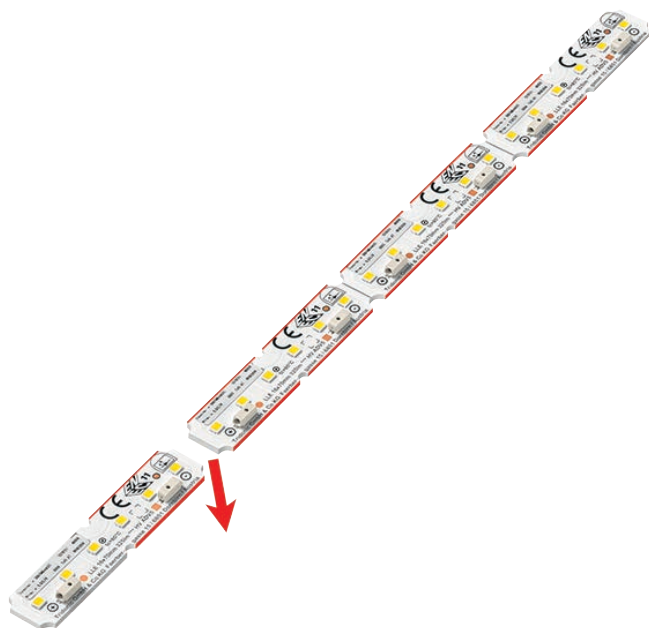
The LED modules are mounted onto a heat sink with M3 screws with plastic washers or ACL BRIDGE LLE16 PUSH-FIX.

All fastening point must be used for mounting.

The cut-outs on the end faces must not be used for fastening.



Only touch the module at the edge to separate the modules (see marking below).



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 16mm HV ADV6

Forward current	tp temperature	L90 / B10	L90 / B50	L80 / B10	L80 / B50	L70 / B10	L70 / B50
100 mA	40 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
	50 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
	60 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
	70 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
	80 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
	85 °C	>72k h	>72k h	>72k h	>72k h	>72k h	>72k h
275 mA	40 °C	61k h	>72k h	>72k h	>72k h	>72k h	>72k h
	50 °C	53k h	71k h	>72k h	>72k h	>72k h	>72k h
	60 °C	39k h	51k h	>72k h	>72k h	>72k h	>72k h
	70 °C	37k h	48k h	>72k h	>72k h	>72k h	>72k h
	80 °C	35k h	45k h	>72k h	>72k h	>72k h	>72k h
	85 °C	34kh	44k h	70k h	>72k h	>72k h	>72k h
700 mA	40 °C	48k h	62k h	>72k h	>72k h	>72k h	>72k h
	50 °C	45k h	59k h	>72k h	>72k h	>72k h	>72k h
	60 °C	42k h	55k h	>72k h	>72k h	>72k h	>72k h
	70 °C	40k h	52k h	>72k h	>72k h	>72k h	>72k h
	80 °C	37k h	49k h	>72k h	>72k h	>72k h	>72k h
	85 °C	36k h	47k h	>72k h	>72k h	>72k h	>72k h

L0C10 >72k 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 I_{max}

5. Electrical values

5.1 Declaration of electrical parameters

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

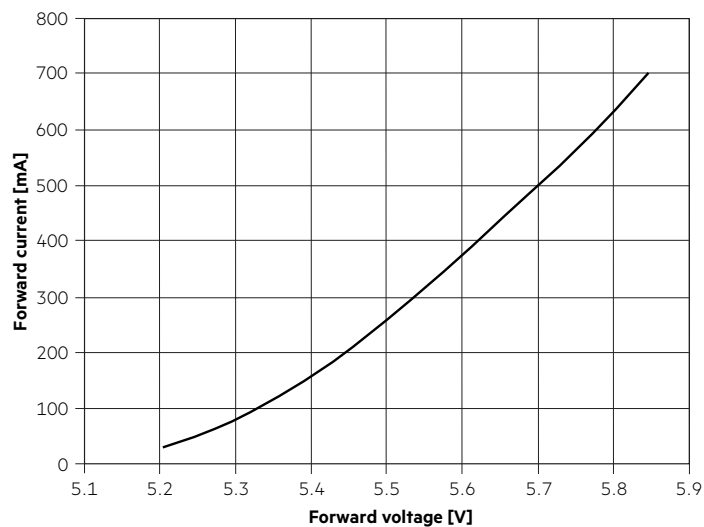
I_{max} ... Max. permissible continuous operating current incl. The tolerances of the LED driver.

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

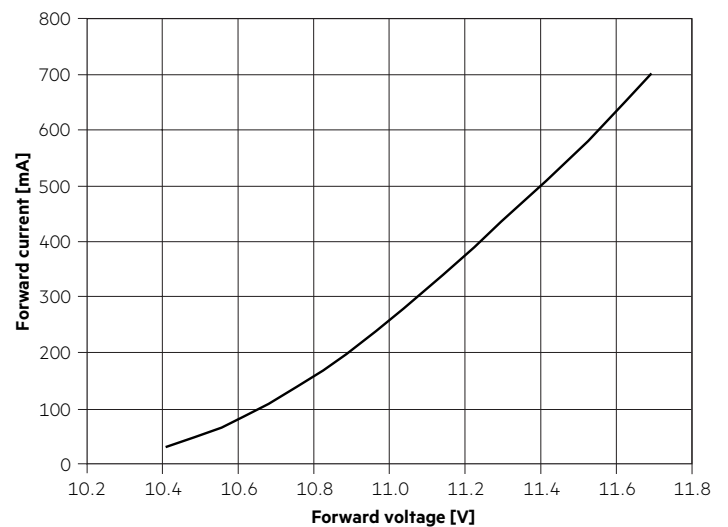
Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

5.2 Typ. forward voltage vs. forward current

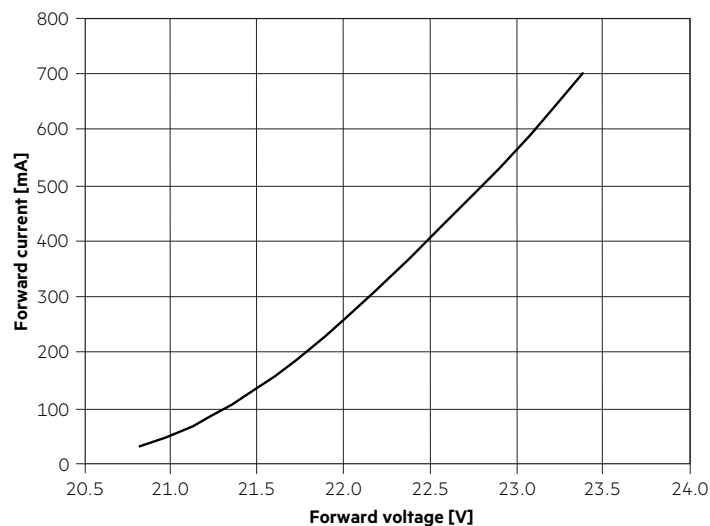
LLE 16x70mm 325lm 9xx HV ADV6



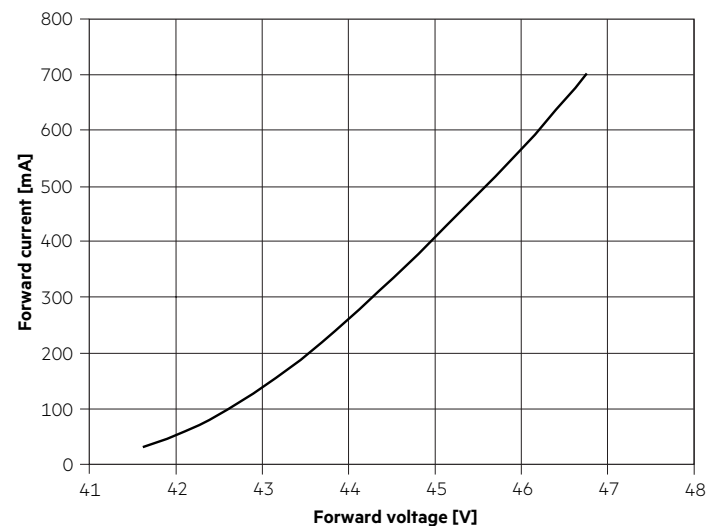
LLE 16x140mm 650lm 9xx HV ADV6



LLE 16x280mm 1250lm 9xx HV ADV6

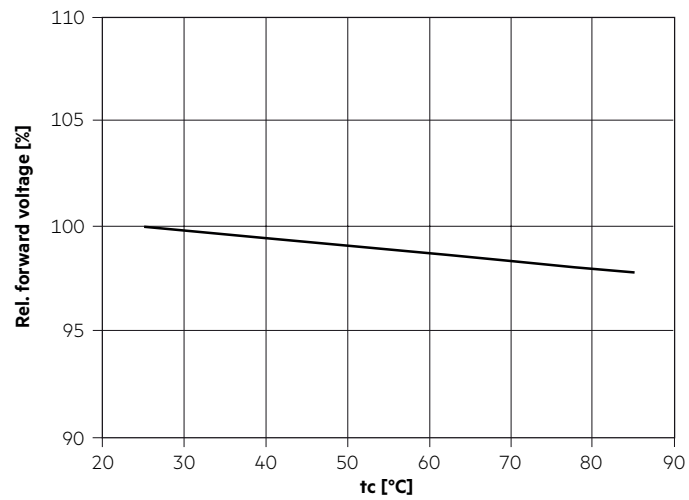


LLE 16x560mm 2400lm 9xx HV ADV6



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

5.3 Forward voltage vs. t_c temperature



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

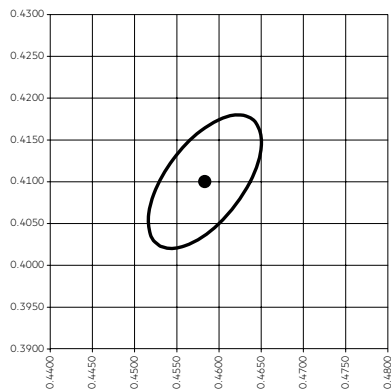
6. Photometric characteristics

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 ± 0.01 .

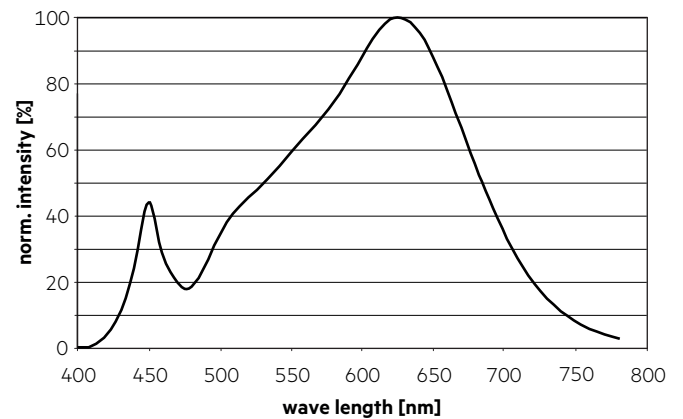
2,700 K

	x0	y0
Centre	0.4578	0.4101

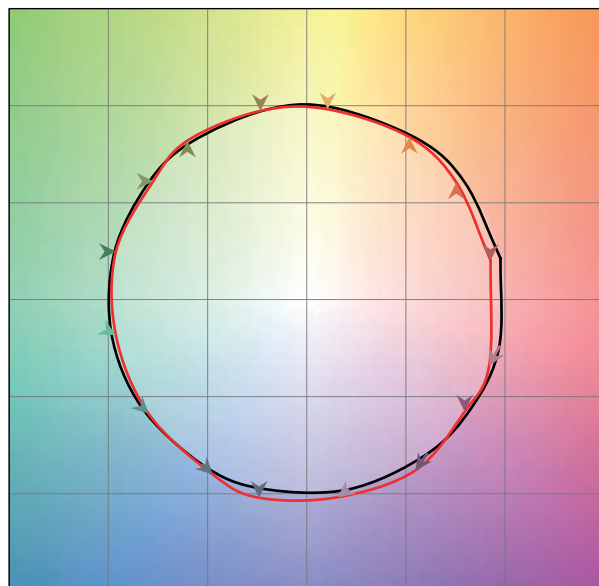


— MacAdam Ellipse: 3SDCM

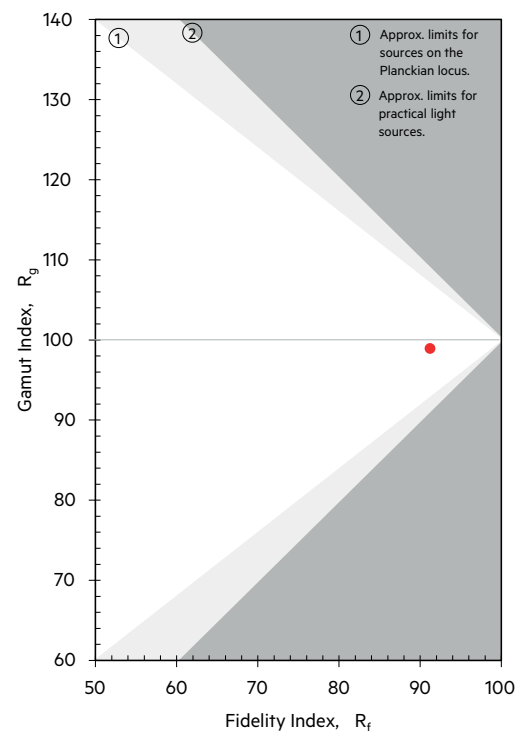
TM30		CRI	
Rf	Rg	Ra	R9
91	99	93	57



Colour vector graphic



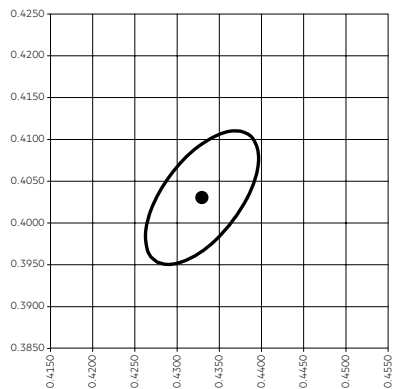
— Reference source
— Test source



— MacAdam Ellipse: 3SDCM

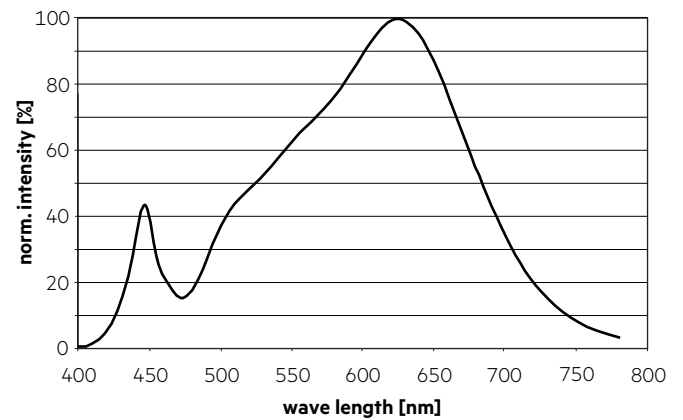
3,000 K

	x0	y0
Centre	0.4338	0.4030

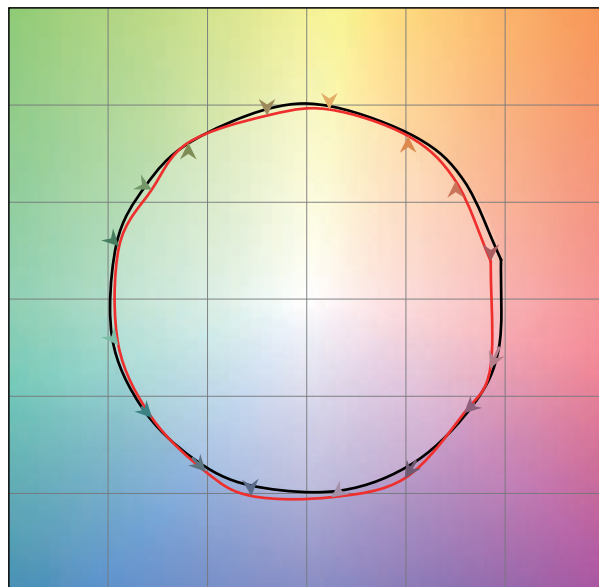


MacAdam Ellipse: 3SDCM

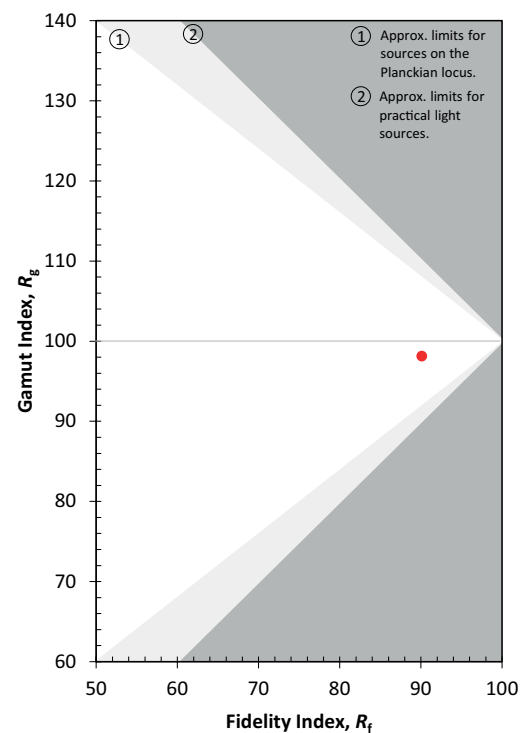
TM30		CRI	
Rf	Rg	Ra	R9
90	98	92	57



Colour vector graphic

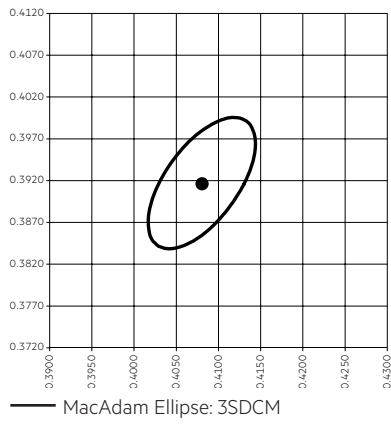


Reference source
Test source



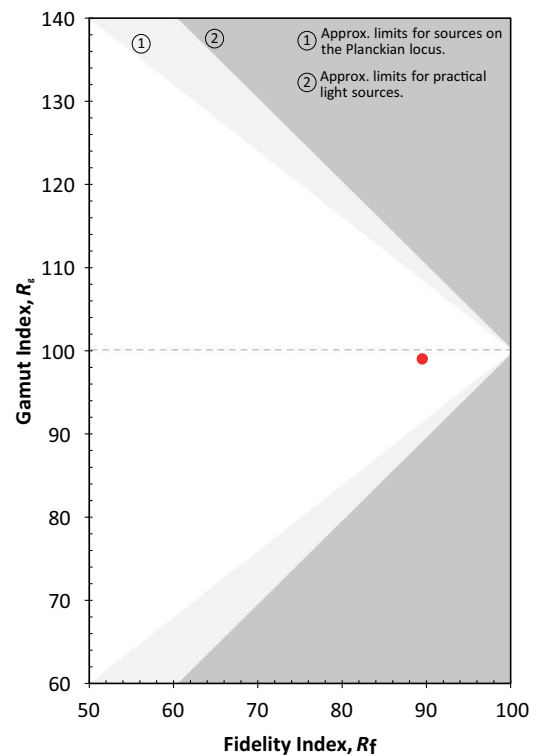
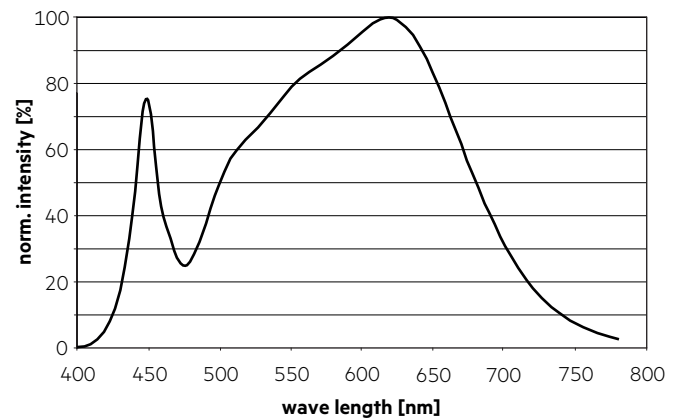
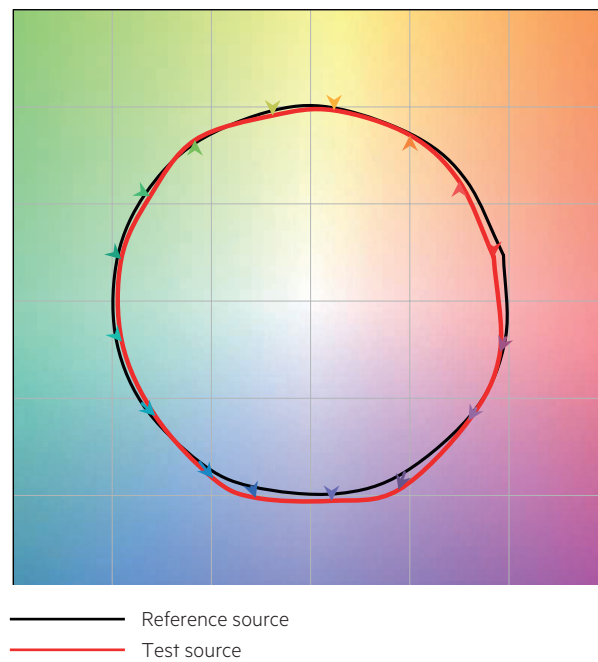
3,500 K

	x0	y0
Centre	0.4073	0.3917



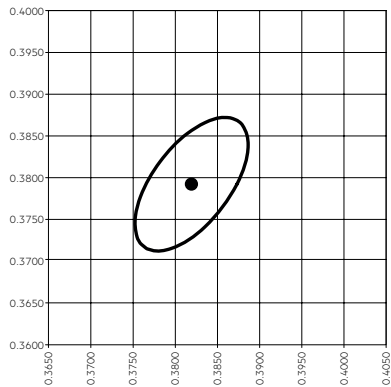
TM30		CRI	
Rf	Rg	Ra	R9
90	99	93	63

Colour vector graphic



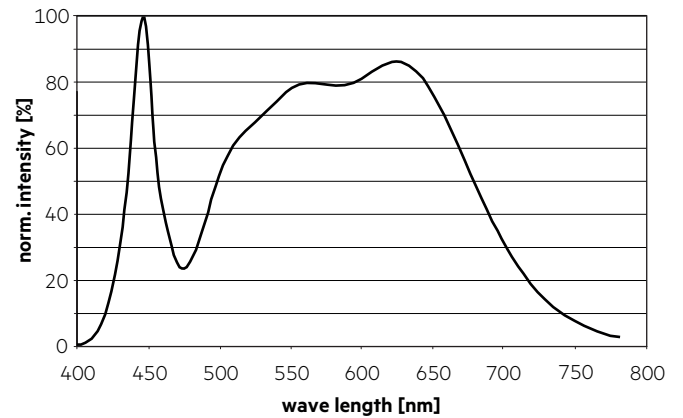
4,000 K

	x0	y0
Center	0.3818	0.3797

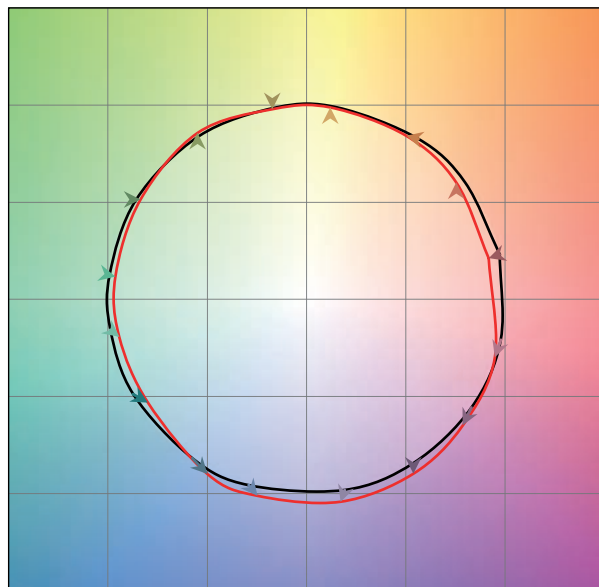


MacAdam Ellipse: 3SDCM

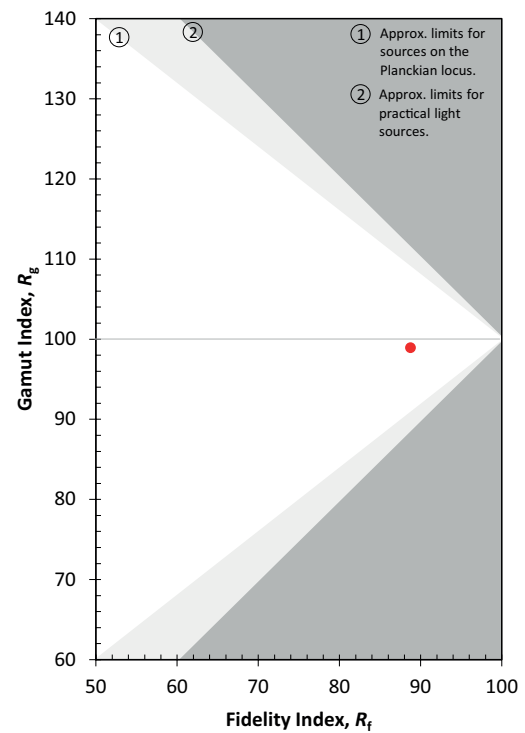
TM30		CRI	
Rf	Rg	Ra	R9
89	99	91	54



Colour vector graphic

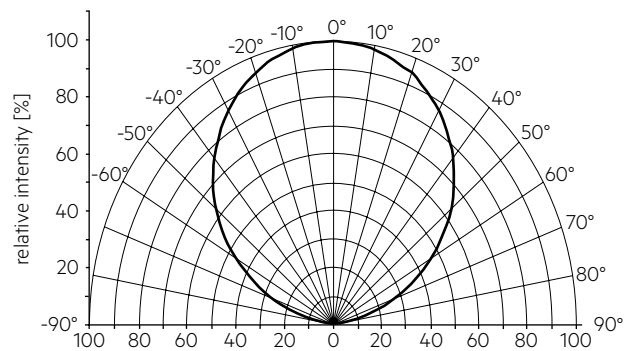


— Reference source
— Test source



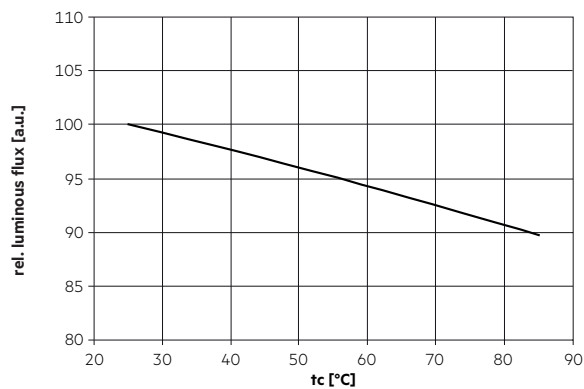
6.2 Light distribution

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

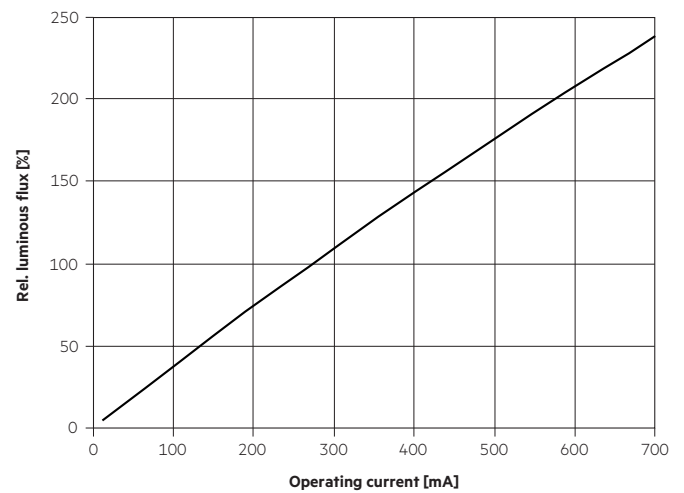


The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 5. To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing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



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 → Technical Data

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim.