



Module LLE G4 16mm 650lm ADV

Module LLE ADVANCED

Product description

- Ideal for compact linear luminaires designs
- Homogenous illumination thanks to small package distance
- SELV module – the single module has a forward voltage < 60 V
- Typ. luminous flux 325, 650 and 1,300 lm
- LED system solution with outstanding system efficacy up to 166 lm/W, consisting of linear LED modules and dimmable LED Driver LCA 50W 100–400mA Ip PRE
- Efficacy of the module up to 186 lm/W
- High colour rendering index CRI > 80
- Small colour tolerance MacAdam 3rd
- Small luminous flux tolerances
- Colour temperatures 2,700 K, 3,000 K, 4,000 K, 5,000 K and 6,500 K
- 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
- Simple installation (e.g. screws)
- Long life-time: 50,000 hours (L80F10)
- 5-year guarantee



LLE G4 16x140mm 325lm ADV



LLE G4 16x280mm 650lm ADV



LLE G4 16x560mm 1300lm ADV



Standards, page 7

Colour temperatures and tolerances, page 11



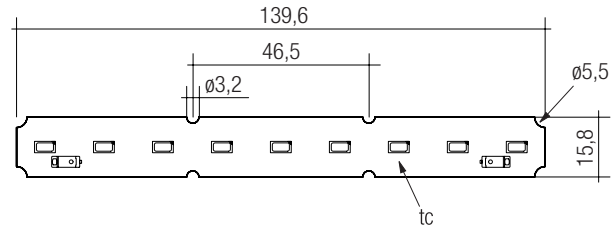


Module LLE G4 16mm 650lm ADV

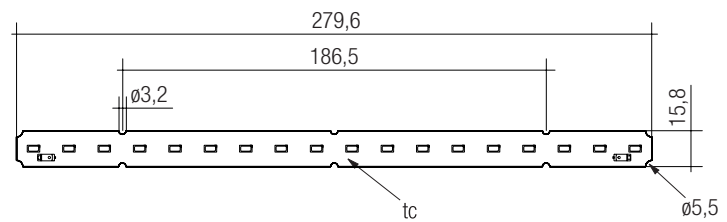
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Technical data

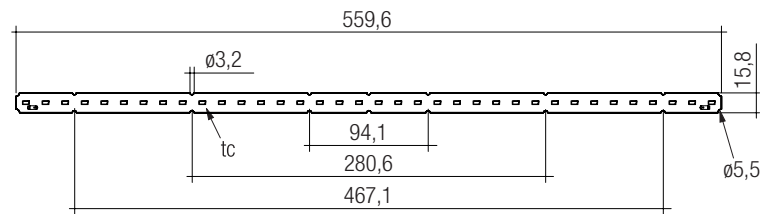
Beam characteristic	120°
Ambient temperature range	-40 ... +65 °C
tp rated	65 °C
tc	85 °C
Irated	225 mA
I _{max}	500 mA
Max. DC forward current	600 mA
Max. permissible LF current ripple	660 mA
Max. permissible peak current	780 mA / max. 10 ms
Max. working voltage for insulation [®]	400 V
Insulation test voltage	1.8 kV
CTI of the printed circuit board	≥ 600
ESD classification	severity level 4
Risk group (IEC 62471:2008) [®]	RG1
Classification acc. to IEC 62031	Built-in
Type of protection	IPO0



LLE G4 16x140mm 325lm ADV



LLE G4 16x280mm 650lm ADV



LLE G4 16x560mm 1300lm ADV

Ordering data

Type	Article number	Colour temperature	Packaging carton	Weight per pc.
LLE G4 16x140mm 325lm 827 2T ADV	28001718	2,700 K	600 pc(s).	0.015 kg
LLE G4 16x140mm 325lm 830 2T ADV	28001719	3,000 K	600 pc(s).	0.015 kg
LLE G4 16x140mm 325lm 840 2T ADV	28001720	4,000 K	600 pc(s).	0.015 kg
LLE G4 16x140mm 325lm 850 2T ADV	28001721	5,000 K	600 pc(s).	0.015 kg
LLE G4 16x140mm 325lm 865 2T ADV	28001722	6,500 K	600 pc(s).	0.015 kg
LLE G4 16x280mm 650lm 827 2T ADV	28001723	2,700 K	400 pc(s).	0.029 kg
LLE G4 16x280mm 650lm 830 2T ADV	28001724	3,000 K	400 pc(s).	0.029 kg
LLE G4 16x280mm 650lm 840 2T ADV	28001725	4,000 K	400 pc(s).	0.029 kg
LLE G4 16x280mm 650lm 850 2T ADV	28001726	5,000 K	400 pc(s).	0.029 kg
LLE G4 16x280mm 650lm 865 2T ADV	28001727	6,500 K	400 pc(s).	0.029 kg
LLE G4 16x560mm 1300lm 827 2T ADV	28001728	2,700 K	480 pc(s).	0.065 kg
LLE G4 16x560mm 1300lm 830 2T ADV	28001729	3,000 K	480 pc(s).	0.065 kg
LLE G4 16x560mm 1300lm 840 2T ADV	28001730	4,000 K	480 pc(s).	0.065 kg
LLE G4 16x560mm 1300lm 850 2T ADV	28001731	5,000 K	480 pc(s).	0.065 kg
LLE G4 16x560mm 1300lm 865 2T ADV	28001732	6,500 K	480 pc(s).	0.065 kg

Specific technical data

Type [®]	Photo-metric code	Typ. luminous flux at tp = 25 °C [®]	Typ. luminous flux at tp = 65 °C [®]	Typ. forward current	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 65 °C [®]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C	Efficacy of the system at tp = 65 °C	Colour rendering index CRI
Operating mode HE at 225 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	310 lm	300 lm	225 mA	7.7 V	9.0 V	1.9 W	165 lm/W	159 lm/W	146 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	330 lm	320 lm	225 mA	7.7 V	9.0 V	1.9 W	174 lm/W	169 lm/W	155 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	350 lm	330 lm	225 mA	7.7 V	9.0 V	1.9 W	183 lm/W	176 lm/W	162 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	350 lm	340 lm	225 mA	7.7 V	9.0 V	1.9 W	186 lm/W	179 lm/W	166 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	350 lm	330 lm	225 mA	7.7 V	9.0 V	1.9 W	184 lm/W	176 lm/W	162 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	630 lm	600 lm	225 mA	15.5 V	17.9 V	3.8 W	165 lm/W	159 lm/W	146 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	660 lm	630 lm	225 mA	15.5 V	17.9 V	3.8 W	174 lm/W	169 lm/W	155 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	700 lm	660 lm	225 mA	15.5 V	17.9 V	3.8 W	183 lm/W	176 lm/W	162 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	710 lm	670 lm	225 mA	15.5 V	17.9 V	3.8 W	186 lm/W	179 lm/W	166 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	700 lm	660 lm	225 mA	15.5 V	17.9 V	3.8 W	184 lm/W	176 lm/W	162 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	1,250 lm	1,200 lm	225 mA	30.9 V	35.8 V	7.5 W	165 lm/W	159 lm/W	146 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	1,330 lm	1,270 lm	225 mA	30.9 V	35.8 V	7.5 W	174 lm/W	169 lm/W	155 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	1,390 lm	1,320 lm	225 mA	30.9 V	35.8 V	7.5 W	183 lm/W	176 lm/W	162 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	1,420 lm	1,340 lm	225 mA	30.9 V	35.8 V	7.5 W	186 lm/W	179 lm/W	166 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	1,400 lm	1,320 lm	225 mA	30.9 V	35.8 V	7.5 W	184 lm/W	176 lm/W	162 lm/W	> 80
Operating mode NM at 300 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	410 lm	390 lm	300 mA	7.9 V	9.1 V	2.5 W	160 lm/W	155 lm/W	143 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	440 lm	420 lm	300 mA	7.9 V	9.1 V	2.5 W	170 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	460 lm	430 lm	300 mA	7.9 V	9.1 V	2.5 W	178 lm/W	171 lm/W	157 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	470 lm	440 lm	300 mA	7.9 V	9.1 V	2.5 W	181 lm/W	174 lm/W	160 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	460 lm	430 lm	300 mA	7.9 V	9.1 V	2.5 W	179 lm/W	171 lm/W	157 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	820 lm	790 lm	300 mA	15.8 V	18.3 V	5.1 W	160 lm/W	155 lm/W	143 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	870 lm	830 lm	300 mA	15.8 V	18.3 V	5.1 W	170 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	910 lm	870 lm	300 mA	15.8 V	18.3 V	5.1 W	178 lm/W	171 lm/W	157 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	930 lm	880 lm	300 mA	15.8 V	18.3 V	5.1 W	181 lm/W	174 lm/W	160 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	920 lm	870 lm	300 mA	15.8 V	18.3 V	5.1 W	179 lm/W	171 lm/W	157 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	1,650 lm	1,570 lm	300 mA	31.6 V	36.5 V	10.1 W	160 lm/W	155 lm/W	143 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	1,750 lm	1,660 lm	300 mA	31.6 V	36.5 V	10.1 W	170 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	1,830 lm	1,740 lm	300 mA	31.6 V	36.5 V	10.1 W	178 lm/W	171 lm/W	157 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	1,870 lm	1,770 lm	300 mA	31.6 V	36.5 V	10.1 W	181 lm/W	174 lm/W	160 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	1,840 lm	1,740 lm	300 mA	31.6 V	36.5 V	10.1 W	179 lm/W	171 lm/W	157 lm/W	> 80
Operating mode NM at 350 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	480 lm	450 lm	350 mA	8.0 V	9.2 V	3.0 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	500 lm	480 lm	350 mA	8.0 V	9.2 V	3.0 W	166 lm/W	160 lm/W	147 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	530 lm	500 lm	350 mA	8.0 V	9.2 V	3.0 W	174 lm/W	167 lm/W	154 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	540 lm	510 lm	350 mA	8.0 V	9.2 V	3.0 W	177 lm/W	170 lm/W	156 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	530 lm	500 lm	350 mA	8.0 V	9.2 V	3.0 W	175 lm/W	167 lm/W	154 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	950 lm	910 lm	350 mA	16.0 V	18.5 V	6.0 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	1,010 lm	960 lm	350 mA	16.0 V	18.5 V	6.0 W	166 lm/W	160 lm/W	147 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	1,060 lm	1,000 lm	350 mA	16.0 V	18.5 V	6.0 W	174 lm/W	167 lm/W	154 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	1,080 lm	1,020 lm	350 mA	16.0 V	18.5 V	6.0 W	177 lm/W	170 lm/W	156 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	1,060 lm	1,000 lm	350 mA	16.0 V	18.5 V	6.0 W	175 lm/W	167 lm/W	154 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	1,900 lm	1,820 lm	350 mA	32.0 V	36.9 V	12.0 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	2,020 lm	1,920 lm	350 mA	32.0 V	36.9 V	12.0 W	166 lm/W	160 lm/W	147 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	2,110 lm	2,000 lm	350 mA	32.0 V	36.9 V	12.0 W	174 lm/W	167 lm/W	154 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	2,150 lm	2,040 lm	350 mA	32.0 V	36.9 V	12.0 W	177 lm/W	170 lm/W	156 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	2,120 lm	2,010 lm	350 mA	32.0 V	36.9 V	12.0 W	175 lm/W	167 lm/W	154 lm/W	> 80

[®] Integral measurement over the complete module.

[®] If mounted with ACL BRIDGE LLE16 PUSH-FIX.

[®] Measured at operating mode HO.

[®] HE ... high efficiency, NM ... nominal mode, HO ... high output.

[®] Tolerance range for optical and electrical data: ±10 %.

Specific technical data

Type [®]	Photo-metric code	Typ. luminous flux at tp = 25 °C [®]	Typ. luminous flux at tp = 65 °C [®]	Typ. forward current	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 65 °C [®]	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C	Efficacy of the system at tp = 65 °C	Colour rendering index CRI
Operating mode HO at 400 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	530 lm	510 lm	400 mA	8.1 V	9.3 V	3.5 W	151 lm/W	146 lm/W	134 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	560 lm	530 lm	400 mA	8.1 V	9.3 V	3.5 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	590 lm	560 lm	400 mA	8.1 V	9.3 V	3.5 W	168 lm/W	162 lm/W	149 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	600 lm	570 lm	400 mA	8.1 V	9.3 V	3.5 W	171 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	600 lm	560 lm	400 mA	8.1 V	9.3 V	3.5 W	170 lm/W	162 lm/W	149 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	1,060 lm	1,010 lm	400 mA	16.2 V	18.7 V	6.9 W	151 lm/W	146 lm/W	134 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	1,130 lm	1,070 lm	400 mA	16.2 V	18.7 V	6.9 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	1,180 lm	1,120 lm	400 mA	16.2 V	18.7 V	6.9 W	168 lm/W	162 lm/W	149 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	1,200 lm	1,130 lm	400 mA	16.2 V	18.7 V	6.9 W	171 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	1,190 lm	1,120 lm	400 mA	16.2 V	18.7 V	6.9 W	170 lm/W	162 lm/W	149 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	2,120 lm	2,020 lm	400 mA	32.4 V	37.3 V	13.8 W	151 lm/W	146 lm/W	134 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	2,250 lm	2,140 lm	400 mA	32.4 V	37.3 V	13.8 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	2,370 lm	2,240 lm	400 mA	32.4 V	37.3 V	13.8 W	168 lm/W	162 lm/W	149 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	2,400 lm	2,270 lm	400 mA	32.4 V	37.3 V	13.8 W	171 lm/W	164 lm/W	151 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	2,390 lm	2,250 lm	400 mA	32.4 V	37.3 V	13.8 W	170 lm/W	162 lm/W	149 lm/W	> 80
Operating mode HO at 450 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	590 lm	560 lm	450 mA	8.2 V	9.4 V	3.9 W	148 lm/W	144 lm/W	132 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	630 lm	600 lm	450 mA	8.2 V	9.4 V	3.9 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	660 lm	620 lm	450 mA	8.2 V	9.4 V	3.9 W	165 lm/W	158 lm/W	145 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	670 lm	630 lm	450 mA	8.2 V	9.4 V	3.9 W	168 lm/W	161 lm/W	148 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	660 lm	620 lm	450 mA	8.2 V	9.4 V	3.9 W	165 lm/W	158 lm/W	145 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	1,180 lm	1,130 lm	450 mA	16.4 V	18.9 V	7.8 W	148 lm/W	144 lm/W	132 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	1,250 lm	1,190 lm	450 mA	16.4 V	18.9 V	7.8 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	1,310 lm	1,250 lm	450 mA	16.4 V	18.9 V	7.8 W	165 lm/W	158 lm/W	145 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	1,340 lm	1,270 lm	450 mA	16.4 V	18.9 V	7.8 W	168 lm/W	161 lm/W	148 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	1,320 lm	1,250 lm	450 mA	16.4 V	18.9 V	7.8 W	165 lm/W	158 lm/W	145 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	2,360 lm	2,260 lm	450 mA	32.8 V	37.7 V	15.7 W	148 lm/W	144 lm/W	132 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	2,500 lm	2,390 lm	450 mA	32.8 V	37.7 V	15.7 W	157 lm/W	152 lm/W	140 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	2,620 lm	2,490 lm	450 mA	32.8 V	37.7 V	15.7 W	165 lm/W	158 lm/W	145 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	2,670 lm	2,530 lm	450 mA	32.8 V	37.7 V	15.7 W	168 lm/W	161 lm/W	148 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	2,640 lm	2,490 lm	450 mA	32.8 V	37.7 V	15.7 W	165 lm/W	158 lm/W	145 lm/W	> 80
Operating mode HO at 500 mA											
LLE G4 16x140mm 325lm 827 ADV	827/359	640 lm	610 lm	500 mA	8.3 V	9.5 V	4.4 W	144 lm/W	139 lm/W	128 lm/W	> 80
LLE G4 16x140mm 325lm 830 ADV	830/359	680 lm	650 lm	500 mA	8.3 V	9.5 V	4.4 W	152 lm/W	147 lm/W	135 lm/W	> 80
LLE G4 16x140mm 325lm 840 ADV	840/359	710 lm	680 lm	500 mA	8.3 V	9.5 V	4.4 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x140mm 325lm 850 ADV	850/359	730 lm	690 lm	500 mA	8.3 V	9.5 V	4.4 W	163 lm/W	156 lm/W	144 lm/W	> 80
LLE G4 16x140mm 325lm 865 ADV	865/359	720 lm	680 lm	500 mA	8.3 V	9.5 V	4.4 W	161 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x280mm 650lm 827 ADV	827/359	1,290 lm	1,230 lm	500 mA	16.6 V	19.1 V	8.8 W	144 lm/W	139 lm/W	128 lm/W	> 80
LLE G4 16x280mm 650lm 830 ADV	830/359	1,360 lm	1,300 lm	500 mA	16.6 V	19.1 V	8.8 W	152 lm/W	147 lm/W	135 lm/W	> 80
LLE G4 16x280mm 650lm 840 ADV	840/359	1,430 lm	1,360 lm	500 mA	16.6 V	19.1 V	8.8 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x280mm 650lm 850 ADV	850/359	1,460 lm	1,380 lm	500 mA	16.6 V	19.1 V	8.8 W	163 lm/W	156 lm/W	144 lm/W	> 80
LLE G4 16x280mm 650lm 865 ADV	865/359	1,440 lm	1,360 lm	500 mA	16.6 V	19.1 V	8.8 W	161 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x560mm 1300lm 827 ADV	827/359	2,580 lm	2,460 lm	500 mA	33.2 V	38.1 V	17.7 W	144 lm/W	139 lm/W	128 lm/W	> 80
LLE G4 16x560mm 1300lm 830 ADV	830/359	2,730 lm	2,600 lm	500 mA	33.2 V	38.1 V	17.7 W	152 lm/W	147 lm/W	135 lm/W	> 80
LLE G4 16x560mm 1300lm 840 ADV	840/359	2,860 lm	2,710 lm	500 mA	33.2 V	38.1 V	17.7 W	160 lm/W	154 lm/W	142 lm/W	> 80
LLE G4 16x560mm 1300lm 850 ADV	850/359	2,910 lm	2,760 lm	500 mA	33.2 V	38.1 V	17.7 W	163 lm/W	156 lm/W	144 lm/W	> 80
LLE G4 16x560mm 1300lm 865 ADV	865/359	2,870 lm	2,720 lm	500 mA	33.2 V	38.1 V	17.7 W	161 lm/W	154 lm/W	142 lm/W	> 80

[®] Integral measurement over the complete module.

[®] If mounted with ACL BRIDGE LLE16 PUSH-FIX.

[®] Measured at operating mode HO.

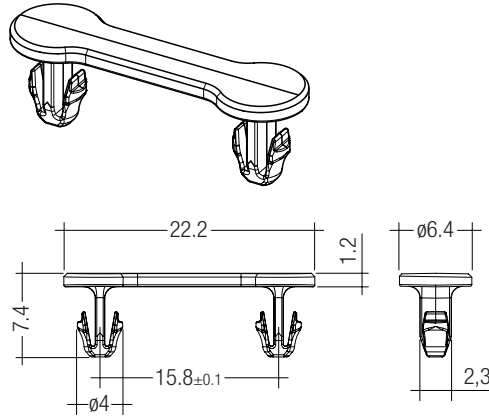
[®] HE ... high efficiency, NM ... nominal mode, HO ... high output.

[®] Tolerance range for optical and electrical data: ±10 %.

BRIDGE LLE16

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

**Ordering data**

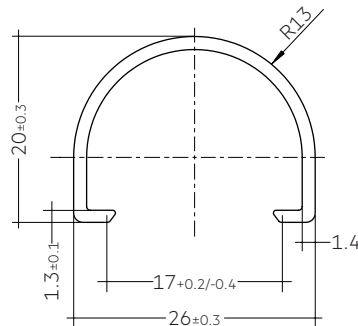
Type	Article number	Colour	Packaging bag [®]	Weight per pc.
ACL BRIDGE LLE16 PUSH-FIX	28001035	White	200 pc(s).	0.001 kg

[®] Minimum sales quantity 200 pcs.

ACL LINEAR COVER 16x1600mm

Product description

- LINEAR COVER for LLE 16
- Protection against direct touch for non-SELV applications
- 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: + 20 mm for 1,600 mm length (ends raw)

**Ordering data**

Type	Article number	Colour	Length	Packaging carton	Weight per pc.
ACL LINEAR COVER 16x1600mm TRANSPARENT	28000949	Transparent	1,600 mm	24 pc(s).	0.147 kg
ACL LINEAR COVER 16x1600mm FROSTED	28000950	Semi-transparent	1,600 mm	24 pc(s).	0.147 kg
ACL LINEAR COVER 16x1600mm DIFFUSE	28000951	Diffuse	1,600 mm	24 pc(s).	0.147 kg

1. Standards

IEC 62031
IEC 62471
IEC 61000-4-2

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	McAdam initial	McAdam after 25% of the life-time (max.6000h)	Luminous flux after 25% of the life-time (max.6000h)		
7				70 – 79	Code	Luminous flux
8				80 – 89	7	≥ 70 %
9				≥90	8	≥ 80 %
				9	≥ 90 %	

1.2 Energy classification

Typ	Energieklassifizierung
LLE G4 16mm ADV	A++

2. Thermal details

2.1 tc point, ambient temperature and life-time

The temperature at tp reference point is crucial for the light output and life-time 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 life-time.

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 ... +100 °C
---------------------	-----------------

Operation only in non condensing environment.

Humidity during processing of the module should be between 0 to 60 %.

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 G4 16x140mm 325lm 8xx ADV

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	65 °C	225 mA		self cooling
25 °C	65 °C	300 mA		self cooling
25 °C	65 °C	400 mA	22.8 K/W	29 cm ²
25 °C	65 °C	500 mA	17.1 K/W	39 cm ²
35 °C	65 °C	225 mA		self cooling
35 °C	65 °C	300 mA	24.4 K/W	27 cm ²
35 °C	65 °C	400 mA	17.1 K/W	39 cm ²
35 °C	65 °C	500 mA	12.8 K/W	52 cm ²
45 °C	65 °C	225 mA	22.7 K/W	29 cm ²
45 °C	65 °C	300 mA	16.3 K/W	41 cm ²
45 °C	65 °C	400 mA	11.4 K/W	58 cm ²
45 °C	65 °C	500 mA	8.6 K/W	78 cm ²
55 °C	65 °C	225 mA	11.4 K/W	59 cm ²
55 °C	65 °C	300 mA	8.1 K/W	82 cm ²
55 °C	65 °C	400 mA	5.7 K/W	117 cm ²
55 °C	65 °C	500 mA	4.3 K/W	156 cm ²

LLE G4 16x280mm 650lm 8xx ADV

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	65 °C	225 mA		self cooling
25 °C	65 °C	300 mA		self cooling
25 °C	65 °C	400 mA	11.4 K/W	58 cm ²
25 °C	65 °C	500 mA	8.6 K/W	78 cm ²
35 °C	65 °C	225 mA		self cooling
35 °C	65 °C	300 mA	12.2 K/W	55 cm ²
35 °C	65 °C	400 mA	8.6 K/W	78 cm ²
35 °C	65 °C	500 mA	6.4 K/W	104 cm ²
45 °C	65 °C	225 mA	11.4 K/W	58 cm ²
45 °C	65 °C	300 mA	8.1 K/W	82 cm ²
45 °C	65 °C	400 mA	5.7 K/W	117 cm ²
45 °C	65 °C	500 mA	4.3 K/W	156 cm ²
55 °C	65 °C	225 mA	5.7 K/W	117 cm ²
55 °C	65 °C	300 mA	4.1 K/W	164 cm ²
55 °C	65 °C	400 mA	2.8 K/W	234 cm ²
55 °C	65 °C	500 mA	2.1 K/W	312 cm ²

LLE G4 16x560mm 1300lm 8xx ADV

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25 °C	65 °C	225 mA		self cooling
25 °C	65 °C	300 mA		self cooling
25 °C	65 °C	400 mA	5.7 K/W	117 cm ²
25 °C	65 °C	500 mA	4.3 K/W	155 cm ²
35 °C	65 °C	225 mA		self cooling
35 °C	65 °C	300 mA	6.1 K/W	109 cm ²
35 °C	65 °C	400 mA	4.3 K/W	156 cm ²
35 °C	65 °C	500 mA	3.2 K/W	207 cm ²
45 °C	65 °C	225 mA	5.7 K/W	117 cm ²
45 °C	65 °C	300 mA	4.1 K/W	164 cm ²
45 °C	65 °C	400 mA	2.9 K/W	234 cm ²
45 °C	65 °C	500 mA	2.1 K/W	311 cm ²
55 °C	65 °C	225 mA	2.9 K/W	234 cm ²
55 °C	65 °C	300 mA	2.0 K/W	329 cm ²
55 °C	65 °C	400 mA	1.4 K/W	469 cm ²
55 °C	65 °C	500 mA	1.1 K/W	624 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.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

LLE modules from Tridonic are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with a LED Driver which complies with the relevant standards. The use of LED Driver from Tridonic in combination with LLE modules guarantees the necessary protection for safe and reliable operation.

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

- Short-circuit protection
- Overload protection
- Overtemperature protection



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

Wrong polarity can damage the LLE.

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

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

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



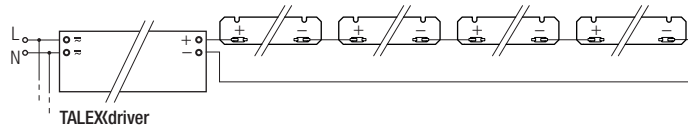
LLE modules are basic isolated up to 400 V (if mounted with ACL BRIDGE LLE16 PUSH-FIX) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 400 V, an additional isolation between LED module and heat sink is required (for example by isolated 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

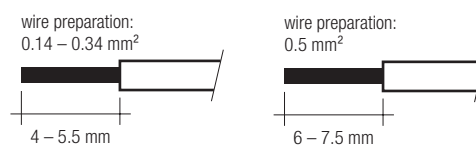


Wiring examples



3.3 Wiring type and cross section

The wiring can be in solid with a cross section of 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 min. 6 M3 screws with plastic washers per module or ACL BRIDGE LLE16 PUSH-FIX.



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. Life-time

4.1 Life-time, lumen maintenance and failure rate

The light output of an LED Module decreases over the life-time, 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 life-time 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.

Life-time declarations are informative and represent no warranty claim.

4.2 Lumen maintenance for LLE G4 16mm ADV

Forward current	tp tempera- ture	L90 / F10		L80 / F10		L70 / F10	
		L90 / F10	L90 / F50	L80 / F10	L80 / F50	L70 / F10	L70 / F50
100 mA	45 °C	38,000 h	43,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	35,000 h	40,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	30,000 h	34,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
150 mA	45 °C	26,000 h	29,000 h	54,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	37,000 h	43,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	34,000 h	38,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
200 mA	45 °C	29,000 h	32,000 h	58,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	25,000 h	28,000 h	51,000 h	57,000 h	>60,000 h	>60,000 h
	65 °C	37,000 h	42,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
225 mA	45 °C	33,000 h	37,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	28,000 h	31,000 h	55,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	23,000 h	26,000 h	48,000 h	54,000 h	>60,000 h	>60,000 h
275 mA	45 °C	37,000 h	42,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	32,000 h	37,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	28,000 h	31,000 h	55,000 h	>60,000 h	>60,000 h	>60,000 h
325 mA	45 °C	23,000 h	25,000 h	46,000 h	52,000 h	>60,000 h	>60,000 h
	55 °C	36,000 h	41,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	31,000 h	36,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
400 mA	45 °C	26,000 h	29,000 h	51,000 h	59,000 h	>60,000 h	>60,000 h
	55 °C	21,000 h	24,000 h	43,000 h	48,000 h	>60,000 h	>60,000 h
	65 °C	45 °C	36,000 h	41,000 h	>60,000 h	>60,000 h	>60,000 h
450 mA	45 °C	30,000 h	34,000 h	58,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	25,000 h	27,000 h	48,000 h	56,000 h	>60,000 h	>60,000 h
	65 °C	20,000 h	22,000 h	40,000 h	45,000 h	>60,000 h	>60,000 h
500 mA	45 °C	36,000 h	40,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	29,000 h	33,000 h	55,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	23,000 h	25,000 h	44,000 h	51,000 h	>60,000 h	>60,000 h
	45 °C	18,000 h	19,000 h	35,000 h	40,000 h	59,000 h	>60,000 h
	55 °C	35,000 h	40,000 h	>60,000 h	>60,000 h	>60,000 h	>60,000 h
	65 °C	28,000 h	32,000 h	53,000 h	60,000 h	>60,000 h	>60,000 h
	45 °C	21,000 h	23,000 h	41,000 h	48,000 h	>60,000 h	>60,000 h
	55 °C	16,000 h	18,000 h	32,000 h	36,000 h	54,000 h	>60,000 h
	65 °C	45 °C	35,000 h	39,000 h	>60,000 h	>60,000 h	>60,000 h
	45 °C	27,000 h	30,000 h	51,000 h	>60,000 h	>60,000 h	>60,000 h
	55 °C	20,000 h	22,000 h	38,000 h	44,000 h	>60,000 h	>60,000 h
	65 °C	15,000 h	16,000 h	29,000 h	32,000 h	49,000 h	56,000 h

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.

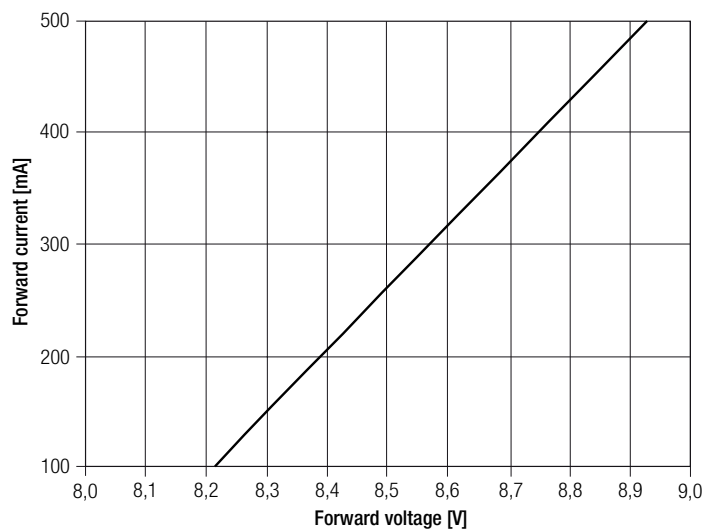
Max. DC forward current ... Max. permissible continuous operating current incl. The tolerances of the LED driver. LED module may be destroyed if this value is exceeded.

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

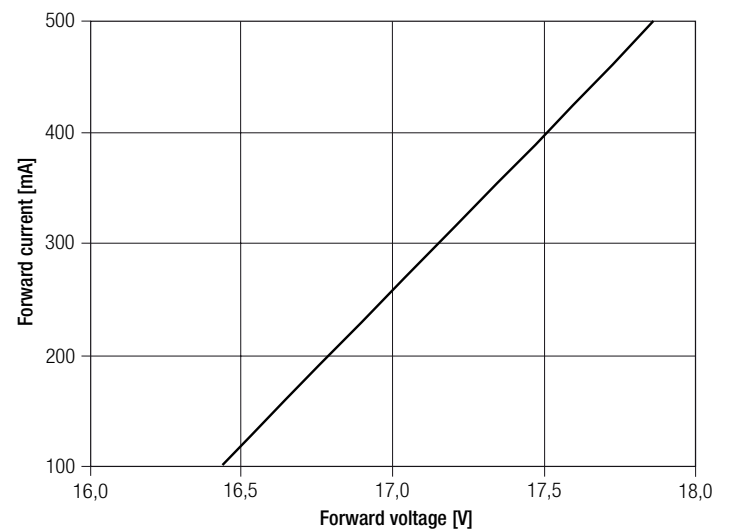
Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

5.2 Typ. forward voltage vs. forward current

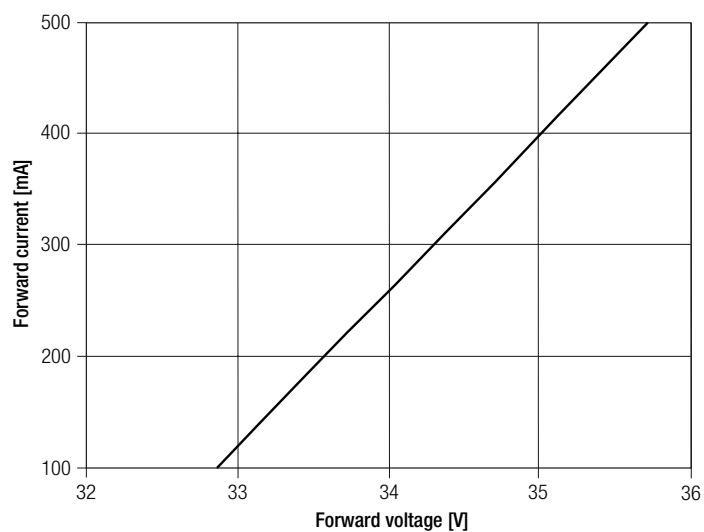
LLE G4 16x140mm 325lm 8xx ADV



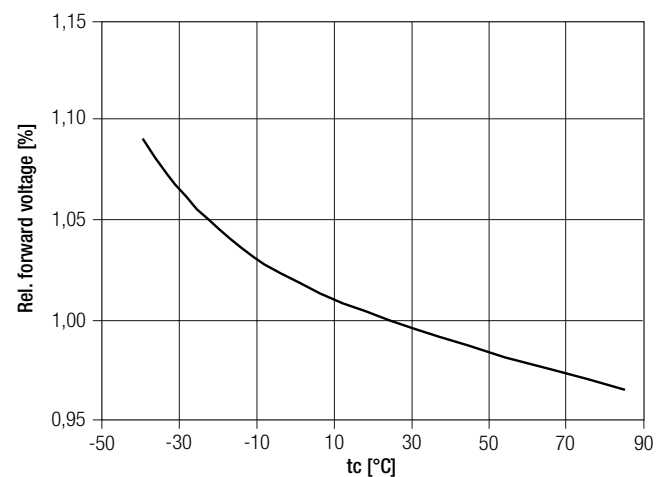
LLE G4 16x280mm 650lm 8xx ADV



LLE G4 16x560mm 1300lm 8xx ADV



5.3 Forward voltage vs. tc temperature



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

6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

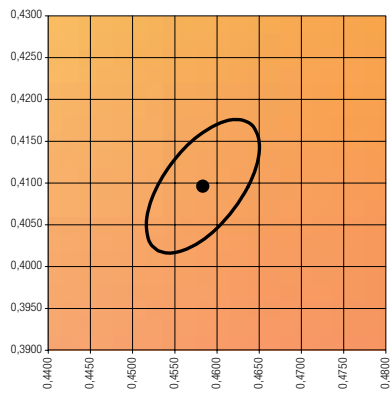
The specified colour coordinates are integral measured by current impulse of 325 mA and a duration of 100 ms.

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

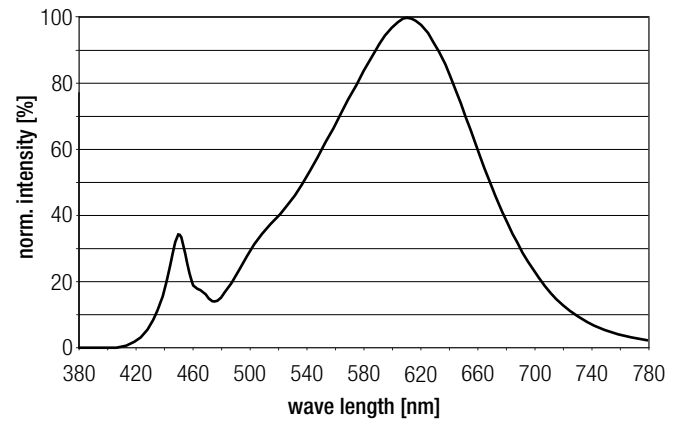
The measurement tolerance of the colour coordinates are ± 0.01 .

2,700 K

	x0	y0
Centre	0.4578	0.4093

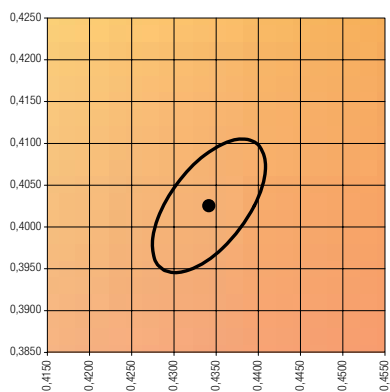


— MacAdam Ellipse: 3SDCM

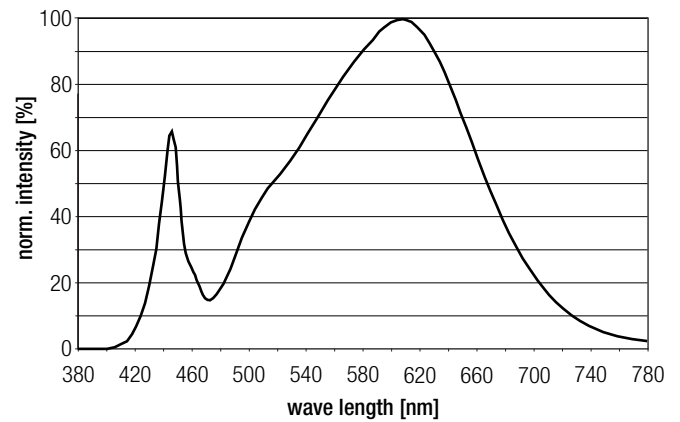


3,000 K

	x0	y0
Centre	0.4340	0.4026

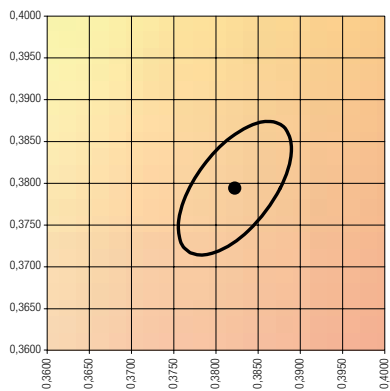


— MacAdam Ellipse: 3SDCM

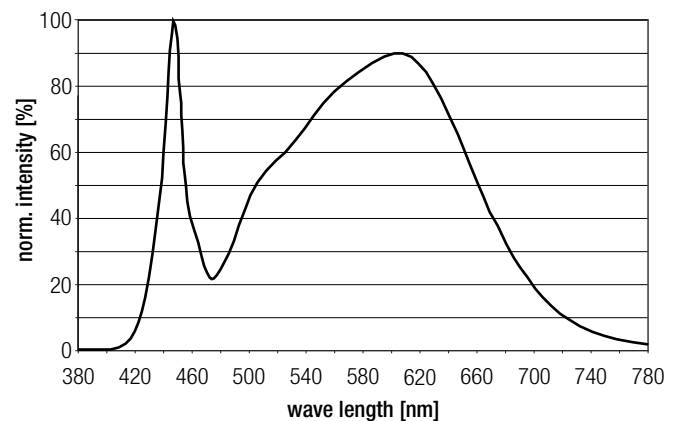


4,000 K

	x0	y0
Mittelpunkt	0.3822	0.3794

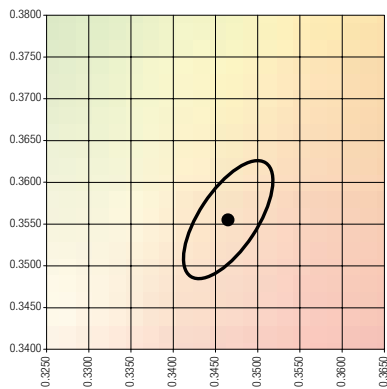


— MacAdam Ellipse: 3SDCM

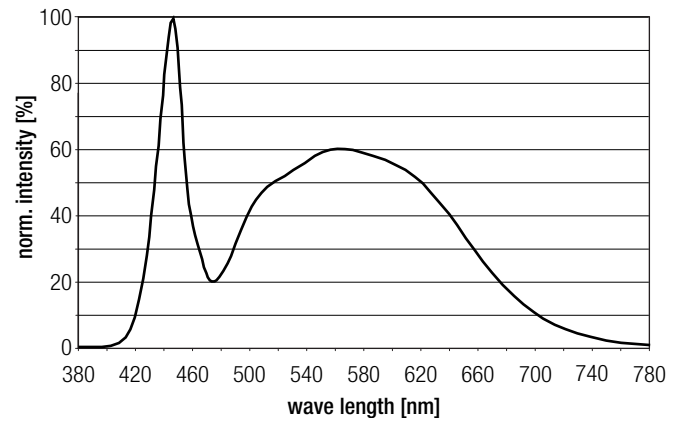


5,000 K

	x0	y0
Mittelpunkt	0.3447	0.3547

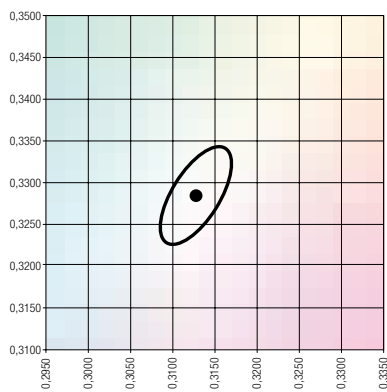


— MacAdam Ellipse: 3SDCM

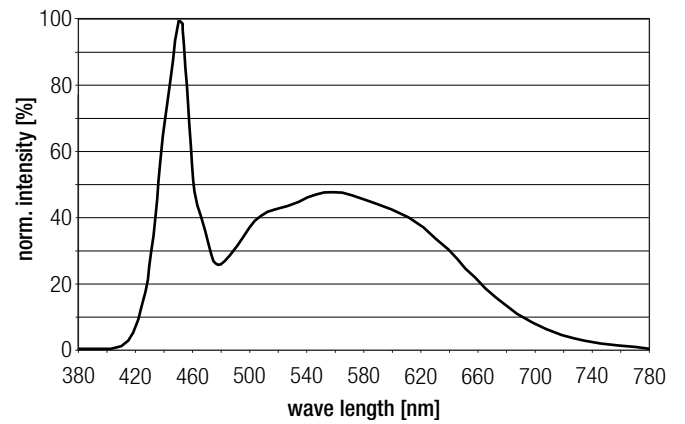


6,500 K

	x0	y0
Mittelpunkt	0.3126	0.3280

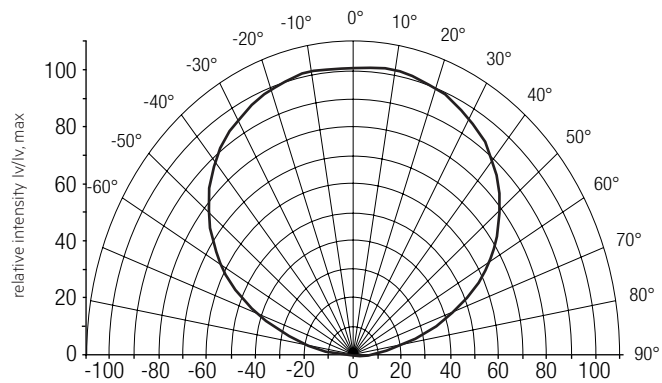


— MacAdam Ellipse: 3SDCM



6.2 Light distribution

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

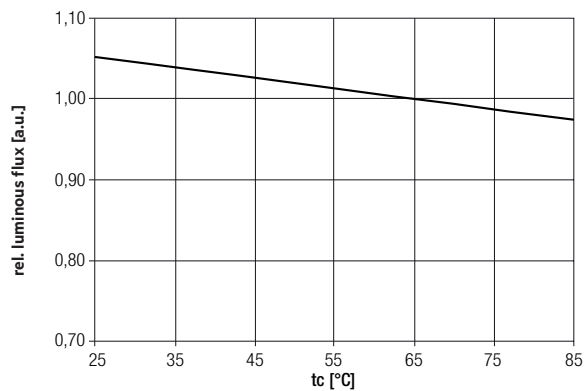


The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 3.

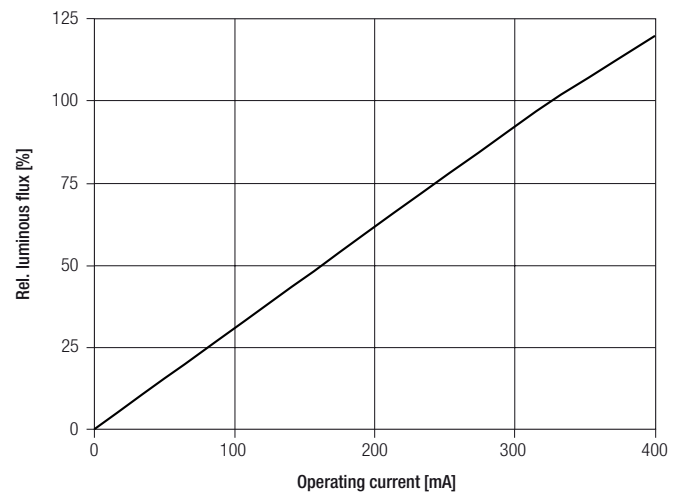
To ensure an ideal mixture of colours and a homogenous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing between module and optic (typ. 4 cm) should be used.

For further information see Design-in Guide, 3D data and photometric data on www.tridonic.com or on request.

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.