TRIDONIC

Module LLE 24x1120 / 24x1400mm HV ADV6

Modules LLE advanced

LLE 24x1120mm 2600lm HV ADV6

LLE 24x1400mm 3250lm HV ADV6

LLE 24x1120mm 4800lm HV ADV6

Product description

_ Ideal for linear and panel lights
_ 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
_ Option backside terminal
_ Broad portfolio from extruded lenses and covers available
_ HE ... High Efficiency, NM ... Nominal Mode, HO ... High Output
_ Long lifetime up to 102,000 hours
_ 5 years guarantee (conditions at https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions)

Optical properties

_ Colour temperatures 3,000, 3,500 and 4,000 K
_ Efficacy of the LED module 205 lm/W at Irated and tp = 25 °C
_ High colour rendering index CRI > 80
_ High colour consistency (MacAdam 3) ①
_ Small luminous flux tolerances

Mechanical properties

_ Module dimension 24 x 1,120 mm and 24 x 1,400 mm (ZHAGA compliant)
_ Simple installation via clips or screws

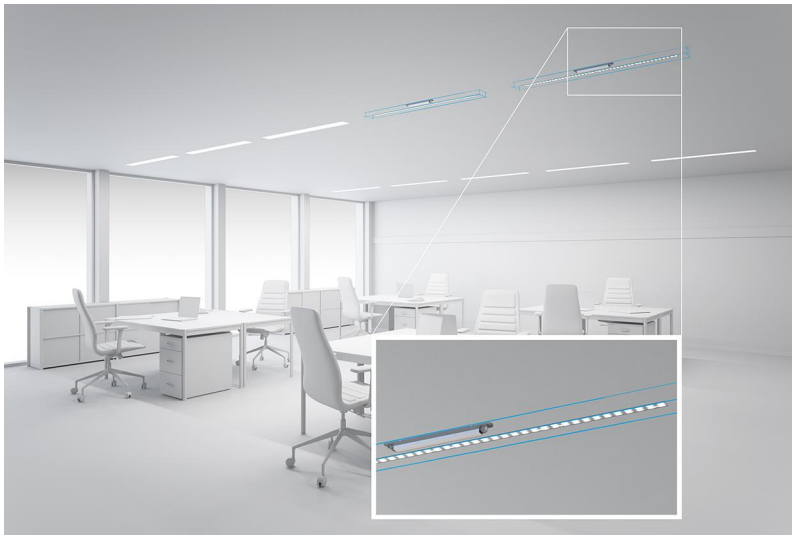
System solution

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

① Integral measurement over the complete module.

Website

http://www.tridonic.com/28004837



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

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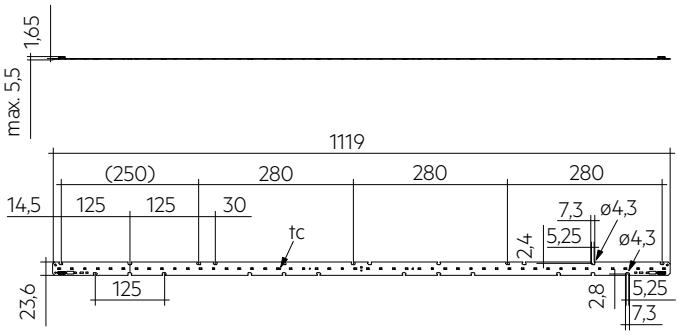
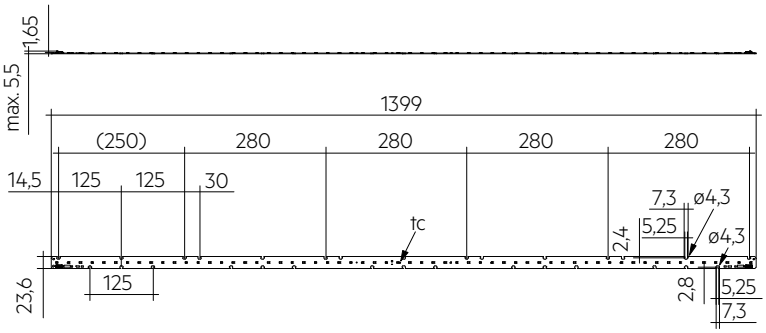
Module LLE 24x1120 / 24x1400mm HV ADV6

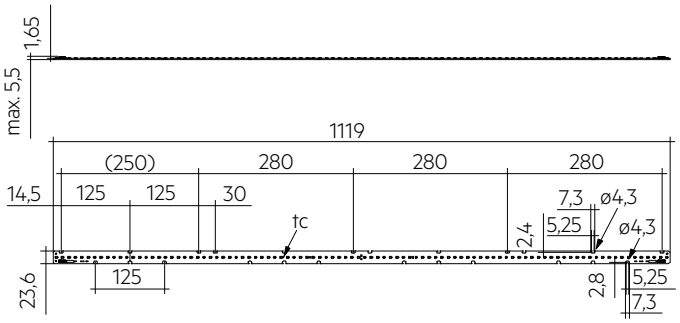
Modules LLE advanced



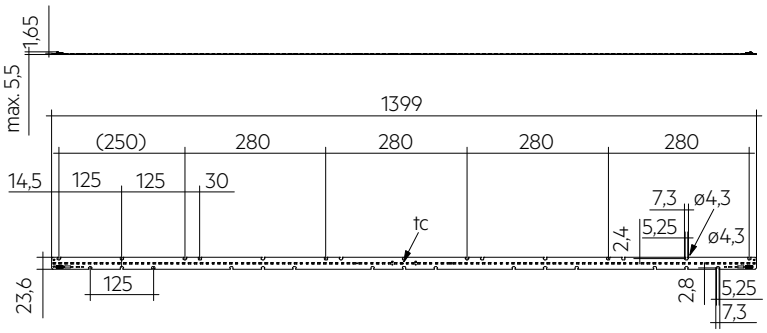
LLE 24x1120mm 2600lm HV ADV6



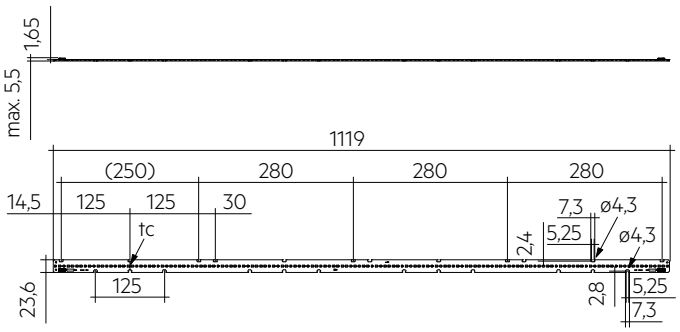
LLE 24x1400mm 3250lm HV ADV6



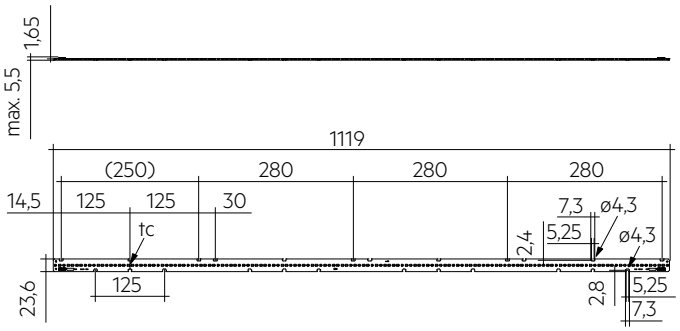
LLE 24x1120mm 4800lm HV ADV6



LLE 24x1400mm 6000lm HV ADV6



LLE 24x1120mm 8000lm HV ADV6



LLE 24x1400mm 10000lm HV ADV6

Ordering data

Type [3]	Article number	Colour temperature	Packaging, carton	Weight per pc.
LLE 24x1120mm 2600lm 830 HV ADV6	**28004837**	3,000 K	10 pc(s).	0.091 kg
LLE 24x1120mm 2600lm 835 HV ADV6	**28004839**	3,500 K	10 pc(s).	0.091 kg
LLE 24x1120mm 2600lm 840 HV ADV6	**28004841**	4,000 K	10 pc(s).	0.091 kg
LLE 24x1400mm 3250lm 830 HV ADV6	**28004851**	3,000 K	10 pc(s).	0.116 kg
LLE 24x1400mm 3250lm 835 HV ADV6	**28004852**	3,500 K	10 pc(s).	0.116 kg
LLE 24x1400mm 3250lm 840 HV ADV6	**28004853**	4,000 K	10 pc(s).	0.116 kg
LLE 24x1120mm 4800lm 830 HV ADV6	**28004884**	3,000 K	10 pc(s).	0.091 kg
LLE 24x1120mm 4800lm 835 HV ADV6	**28004885**	3,500 K	10 pc(s).	0.091 kg
LLE 24x1120mm 4800lm 840 HV ADV6	**28004886**	4,000 K	10 pc(s).	0.091 kg
LLE 24x1400mm 6000lm 830 HV ADV6	**28004889**	3,000 K	10 pc(s).	0.116 kg
LLE 24x1400mm 6000lm 835 HV ADV6	**28004890**	3,500 K	10 pc(s).	0.116 kg
LLE 24x1400mm 6000lm 840 HV ADV6	**28004891**	4,000 K	10 pc(s).	0.116 kg
LLE 24x1120mm 8000lm 830 HV ADV6	**28004908**	3,000 K	10 pc(s).	0.091 kg
LLE 24x1120mm 8000lm 840 HV ADV6	**28004909**	4,000 K	10 pc(s).	0.091 kg
LLE 24x1400mm 10000lm 830 HV ADV6	**28004910**	3,000 K	10 pc(s).	0.116 kg
LLE 24x1400mm 10000lm 840 HV ADV6	**28004911**	4,000 K	10 pc(s).	0.116 kg

Technical data

Beam characteristic	120°
Ambient temperature ta	-40 … +65 °C
tp rated	50 °C
tc	95 °C
Irated for 2,600 - 6,000 lm	275 mA
Irated for 8,000 - 10,000 lm	300 mA
Imax for 2,600 - 6,000 lm	800 mA
Imax for 8,000 - 10,000 lm	700 mA
Max. permissible LF current ripple for 2,600 - 6,000 lm	900 mA
Max. permissible LF current ripple for 8,000 - 10,000 lm	800 mA
Max. permissible peak current	1,350 mA / max. 10 ms
Max. working voltage for insulation for 2,600 - 6,000 lm [2]	440 V
Max. working voltage for insulation for 8,000 - 10,000 lm [2]	350 V
Insulation test voltage for 2,600 - 6,000 lm	1.88 kV
Insulation test voltage for 8,000 - 10,000 lm	1.7 kV
Colour tolerance	3 SDCM
ESD classification	Severity level 2
Risk group (IEC 62471) for 2,600 - 3,250 lm	RG1 (> 562 – 800 mA (Imax)), RGO (≤ 562 mA)
Risk group (IEC 62471) for 4,800 - 6,000 lm	RG1 (> 280 – 800 mA (Imax)), RGO (≤ 280 mA)
Risk group (IEC 62471) for 8,000 - 10,000 lm	RG1 (> 208 – 700 mA (Imax)), RGO (≤ 208 mA)
Classification acc. to IEC 62031	Built-in
Type of protection	IP00
Lumen maintenance L70B50	102,000 h
Guarantee (conditions at www.tridonic.com)	5 Year(s)

Approval marks

RoHS

Standards

IEC 62031, IEC 62471, IEC 61000-4-2, IEC 62778, IEC 61547

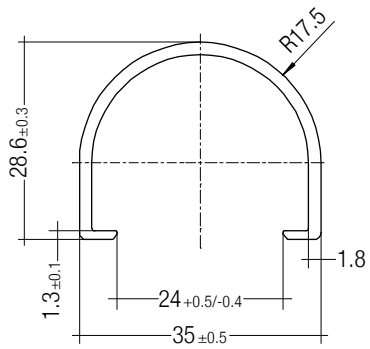
Specific technical data

Type	Article number	Photometric code[4]	Useful luminous flux at tp = 25 °C[5]	Expected luminous flux at tp rated[6]	Typ. forward current	Min. forward voltage at tp rated	Max. forward voltage at tp = 25 °C	Power consumption Pon at tp = 25 °C[7]	Efficacy of the module at tp = 25 °C	Expected efficacy of the module at tp rated	Colour rendering index CRI
Operating mode HE											
LLE 24x1120mm 2600lm 830 HV ADV6	**28004837**	830/359	–	832 lm	100 mA	40.3 V	43.9 V	–	–	197 lm/W	>80
LLE 24x1120mm 2600lm 835 HV ADV6	**28004839**	835/359	–	860 lm	100 mA	40.3 V	43.9 V	–	–	204 lm/W	>80
LLE 24x1120mm 2600lm 840 HV ADV6	**28004841**	840/359	–	882 lm	100 mA	40.3 V	43.9 V	–	–	209 lm/W	>80
LLE 24x1400mm 3250lm 830 HV ADV6	**28004851**	830/359	–	1,040 lm	100 mA	50.4 V	54.9 V	–	–	197 lm/W	>80
LLE 24x1400mm 3250lm 835 HV ADV6	**28004852**	835/359	–	1,075 lm	100 mA	50.4 V	54.9 V	–	–	204 lm/W	>80
LLE 24x1400mm 3250lm 840 HV ADV6	**28004853**	840/359	–	1,103 lm	100 mA	50.4 V	54.9 V	–	–	209 lm/W	>80
LLE 24x1120mm 4800lm 830 HV ADV6	**28004884**	830/359	–	1,664 lm	100 mA	80.7 V	87.8 V	–	–	197 lm/W	>80
LLE 24x1120mm 4800lm 835 HV ADV6	**28004885**	835/359	–	1,721 lm	100 mA	80.7 V	87.8 V	–	–	204 lm/W	>80
LLE 24x1120mm 4800lm 840 HV ADV6	**28004886**	840/359	–	1,765 lm	100 mA	80.7 V	87.8 V	–	–	209 lm/W	>80
LLE 24x1400mm 6000lm 830 HV ADV6	**28004889**	830/359	–	2,081 lm	100 mA	100.8 V	109.8 V	–	–	197 lm/W	>80
LLE 24x1400mm 6000lm 835 HV ADV6	**28004890**	835/359	–	2,151 lm	100 mA	100.8 V	109.8 V	–	–	204 lm/W	>80
LLE 24x1400mm 6000lm 840 HV ADV6	**28004891**	840/359	–	2,207 lm	100 mA	100.8 V	109.8 V	–	–	209 lm/W	>80
LLE 24x1120mm 8000lm 830 HV ADV6	**28004908**	830/359	–	2,497 lm	100 mA	121.0 V	131.7 V	–	–	197 lm/W	>80
LLE 24x1120mm 8000lm 840 HV ADV6	**28004909**	840/359	–	2,648 lm	100 mA	121.0 V	131.7 V	–	–	209 lm/W	>80
LLE 24x1400mm 10000lm 830 HV ADV6	**28004910**	830/359	–	3,121 lm	100 mA	151.2 V	164.7 V	–	–	197 lm/W	>80
LLE 24x1400mm 10000lm 840 HV ADV6	**28004911**	840/359	–	3,310 lm	100 mA	151.2 V	164.7 V	–	–	209 lm/W	>80
Operating mode NM											
LLE 24x1120mm 2600lm 830 HV ADV6	**28004837**	830/359	2,340 lm	2,245 lm	275 mA	41.8 V	45.4 V	12.1 W	193 lm/W	187 lm/W	>80
LLE 24x1120mm 2600lm 835 HV ADV6	**28004839**	835/359	2,420 lm	2,322 lm	275 mA	41.8 V	45.4 V	12.1 W	199 lm/W	193 lm/W	>80
LLE 24x1120mm 2600lm 840 HV ADV6	**28004841**	840/359	2,482 lm	2,382 lm	275 mA	41.8 V	45.4 V	12.1 W	205 lm/W	198 lm/W	>80
LLE 24x1400mm 3250lm 830 HV ADV6	**28004851**	830/359	2,925 lm	2,807 lm	275 mA	52.3 V	56.8 V	15.2 W	193 lm/W	187 lm/W	>80
LLE 24x1400mm 3250lm 835 HV ADV6	**28004852**	835/359	3,024 lm	2,902 lm	275 mA	52.3 V	56.8 V	15.2 W	199 lm/W	193 lm/W	>80
LLE 24x1400mm 3250lm 840 HV ADV6	**28004853**	840/359	3,102 lm	2,977 lm	275 mA	52.3 V	56.8 V	15.2 W	205 lm/W	198 lm/W	>80
LLE 24x1120mm 4800lm 830 HV ADV6	**28004884**	830/359	4,680 lm	4,491 lm	275 mA	83.6 V	90.8 V	24.3 W	193 lm/W	187 lm/W	>80
LLE 24x1120mm 4800lm 835 HV ADV6	**28004885**	835/359	4,839 lm	4,644 lm	275 mA	83.6 V	90.8 V	24.3 W	199 lm/W	193 lm/W	>80
LLE 24x1120mm 4800lm 840 HV ADV6	**28004886**	840/359	4,964 lm	4,764 lm	275 mA	83.6 V	90.8 V	24.3 W	205 lm/W	198 lm/W	>80
LLE 24x1400mm 6000lm 830 HV ADV6	**28004889**	830/359	5,850 lm	5,614 lm	275 mA	104.5 V	113.5 V	30.3 W	193 lm/W	187 lm/W	>80
LLE 24x1400mm 6000lm 835 HV ADV6	**28004890**	835/359	6,049 lm	5,805 lm	275 mA	104.5 V	113.5 V	30.3 W	199 lm/W	193 lm/W	>80
LLE 24x1400mm 6000lm 840 HV ADV6	**28004891**	840/359	6,205 lm	5,955 lm	275 mA	104.5 V	113.5 V	30.3 W	205 lm/W	198 lm/W	>80
LLE 24x1120mm 8000lm 830 HV ADV6	**28004908**	830/359	7,637 lm	7,330 lm	300 mA	125.9 V	136.7 V	39.9 W	192 lm/W	186 lm/W	>80
LLE 24x1120mm 8000lm 840 HV ADV6	**28004909**	840/359	1,985 lm	7,774 lm	300 mA	125.9 V	136.7 V	39.9 W	203 lm/W	197 lm/W	>80
LLE 24x1400mm 10000lm 830 HV ADV6	**28004910**	830/359	9,546 lm	9,162 lm	300 mA	157.4 V	170.9 V	49.8 W	192 lm/W	186 lm/W	>80
LLE 24x1400mm 10000lm 840 HV ADV6	**28004911**	840/359	10,124 lm	9,717 lm	300 mA	157.4 V	170.9 V	49.8 W	203 lm/W	197 lm/W	>80
Operating mode HO											
LLE 24x1120mm 2600lm 830 HV ADV6	**28004837**	830/359	–	5,332 lm	700 mA	44.4 V	48.1 V	–	–	164 lm/W	>80
LLE 24x1120mm 2600lm 835 HV ADV6	**28004839**	835/359	–	5,513 lm	700 mA	44.4 V	48.1 V	–	–	170 lm/W	>80
LLE 24x1120mm 2600lm 840 HV ADV6	**28004841**	840/359	–	5,655 lm	700 mA	44.4 V	48.1 V	–	–	174 lm/W	>80
LLE 24x1400mm 3250lm 830 HV ADV6	**28004851**	830/359	–	6,665 lm	700 mA	55.5 V	60.1 V	–	–	164 lm/W	>80
LLE 24x1400mm 3250lm 835 HV ADV6	**28004852**	835/359	–	6,891 lm	700 mA	55.5 V	60.1 V	–	–	170 lm/W	>80
LLE 24x1400mm 3250lm 840 HV ADV6	**28004853**	840/359	–	7,096 lm	700 mA	55.5 V	60.1 V	–	–	174 lm/W	>80
LLE 24x1120mm 4800lm 830 HV ADV6	**28004884**	830/359	–	10,664 lm	700 mA	88.9 V	96.1 V	–	–	164 lm/W	>80
LLE 24x1120mm 4800lm 835 HV ADV6	**28004885**	835/359	–	11,026 lm	700 mA	88.9 V	96.1 V	–	–	170 lm/W	>80
LLE 24x1120mm 4800lm 840 HV ADV6	**28004886**	840/359	–	11,310 lm	700 mA	88.9 V	96.1 V	–	–	174 lm/W	>80
LLE 24x1400mm 6000lm 830 HV ADV6	**28004889**	830/359	–	13,330 lm	700 mA	111.1 V	120.1 V	–	–	164 lm/W	>80
LLE 24x1400mm 6000lm 835 HV ADV6	**28004890**	835/359	–	13,783 lm	700 mA	111.1 V	120.1 V	–	–	170 lm/W	>80
LLE 24x1400mm 6000lm 840 HV ADV6	**28004891**	840/359	–	14,138 lm	700 mA	111.1 V	120.1 V	–	–	174 lm/W	>80
LLE 24x1120mm 8000lm 830 HV ADV6	**28004908**	830/359	–	13,996 lm	600 mA	131.7 V	142.5 V	–	–	170 lm/W	>80
LLE 24x1120mm 8000lm 840 HV ADV6	**28004909**	840/359	–	14,844 lm	600 mA	131.7 V	142.5 V	–	–	180 lm/W	>80
LLE 24x1400mm 10000lm 830 HV ADV6	**28004910**	830/359	–	17,495 lm	600 mA	164.6 V	178.1 V	–	–	170 lm/W	>80
LLE 24x1400mm 10000lm 840 HV ADV6	**28004911**	840/359	–	18,556 lm	600 mA	164.6 V	178.1 V	–	–	180 lm/W	>80

② If mounted with M4 screws with 7 mm head diameter.
③ HE ... High Efficiency, NM ... Nominal Mode, HO ... High Output.
④ The detailed explanation, see data sheet section 1.1.
⑤ Tolerance of useful light flux - 0 % / + 15 %. Measurement uncertainty ± 10 %.
⑥ Measurement uncertainty ± 10 %. Based on calculation.
⑦ Tolerance of power consumption Pon ± 10 %. Measurement uncertainty ± 5 %.

LINEAR COVER LLE

Accessory



Product description

_ LINEAR COVER for LLE
_ Protection against direct touch for non-SELV applications (recommendation LLE 20: use all fixing points and screwed Endcap, recommendation LLE 24: use all fixing points)
_ Fast snap on mounting on to LLE 20: with M4 screws and plastic washers, to LLE 24: with clips or plastic washers
_ High transmission: transparent, semi-transparent and diffuse
_ Material: PMMA
_ Tolerances: ± 1 mm for 597 mm length (ends finished), + 10 mm from length 1,150 mm (ends raw)

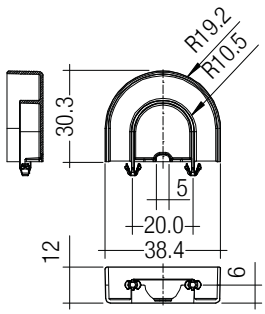
Website
http://www.tridonic.com/28000338

Ordering data

Type	Article number	Colour	Length L	Efficiency	Packaging, carton	Weight per pc.
LINEAR COVER SY Transparent 1600mm	**28000338**	Transparent	1,600 mm	94 %	12 pc(s).	0.272 kg
LINEAR COVER SY Frosted 1800mm	**28000437**	Semi-transparent	1,800 mm	87 %	12 pc(s).	0.308 kg
LINEAR COVER SY Frosted 1600mm	**28000339**	Semi-transparent	1,600 mm	87 %	12 pc(s).	0.272 kg
LINEAR COVER SY Frosted 1500mm	**28000435**	Semi-transparent	1,500 mm	87 %	12 pc(s).	0.244 kg
LINEAR COVER SY Frosted 1200mm	**28000422**	Semi-transparent	1,200 mm	87 %	12 pc(s).	0.205 kg
LINEAR COVER SY Frosted 597mm	**28000340**	Semi-transparent	597 mm	87 %	12 pc(s).	0.102 kg
LINEAR COVER SY Diffuse 1800mm	**28000438**	Diffuse	1,800 mm	76 %	12 pc(s).	0.308 kg
LINEAR COVER SY Diffuse 1600mm	**28000341**	Diffuse	1,600 mm	76 %	12 pc(s).	0.272 kg
LINEAR COVER SY Diffuse 1500mm	**28000436**	Diffuse	1,500 mm	76 %	12 pc(s).	0.257 kg
LINEAR COVER SY Diffuse 1200mm	**28000434**	Diffuse	1,200 mm	76 %	12 pc(s).	0.205 kg
LINEAR COVER SY Diffuse 597mm	**28000342**	Diffuse	597 mm	76 %	12 pc(s).	0.102 kg

ACL ENDCAP LLE

Accessory



Product description

_ ENDCAP for LLE
_ PUSH-FIX: Fast snap on mounting (sheet thickness 0.5 – 1.0 mm), for drilling hole 4 mm
_ SCREW-FIX: Screw mounting with EJOT Delta PT WN 5451 30x8 (not included), tightening torque 0.7 Nm
_ Clip made of polycarbonate

Website

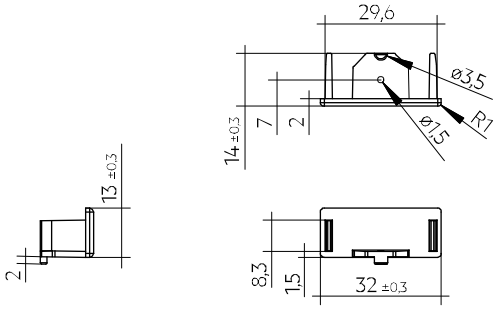
http://www.tridonic.com/28001037

Ordering data

Type	Article number	Colour	Packaging, carton	Weight per pc.
ACL ENDCAP LLE24 PUSH-FIX	**28001037**	White	480 pc(s).	0.003 kg
ACL ENDCAP LLE24 SCREW-FIX	**28002315**	White	480 pc(s).	0.003 kg

ACL LINEAR LENS 24mm

Accessory



Product description LINEAR LENS

_ Linear lens for LLE 20 / 24
_ Available with different beam characteristics
_ Protection against direct touch for non-SELV applications (recommendation: use all fixing points)
_ Fast snap on mounting on to LLE 20: with M4 screws and plastic washers, to LLE 24: with clips or plastic washers
_ Recommendation: Fastening with screws and plastic washers, see 2.3 Heat sink specifications in data sheet
_ Material: PMMA
_ Available lengths: 1,200, 1,500 and 1,800 mm, Tolerance: + 10 mm (ends raw)
_ Max. permissible temperature 80 °C
_ Photometric data available on website

Product description Endcap

_ ENDCAP for LINEAR LENS 24mm INTENSE, ASY and DASY
_ Mounting by clipping in and screwing from below using screw EJOT Delta PT WN 5451 20x4, tightening torque 0.7 Nm
_ Made of Polyamide UL94 V0

Website

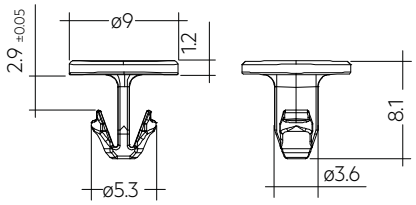
http://www.tridonic.com/28001428

Ordering data

Type	Article number	Length L	Beam characteristic	Efficiency	Packaging, carton	Weight per pc.
ACL LINEAR LENS 24x1200mm 60°	**28001428**	1,200 mm	60°	97 %	21 pc(s).	0.196 kg
ACL LINEAR LENS 24x1200mm 90°	**28001429**	1,200 mm	90°	97 %	21 pc(s).	0.165 kg
ACL LINEAR LENS 24x1500mm 60°	**28000953**	1,500 mm	60°	97 %	21 pc(s).	0.261 kg
ACL LINEAR LENS 24x1500mm 90°	**28000955**	1,500 mm	90°	97 %	21 pc(s).	0.221 kg
ACL LINEAR LENS 24x1200mm INTENSE	**28002024**	1,200 mm	40°	95 %	18 pc(s).	0.261 kg
ACL LINEAR LENS 24x1500mm INTENSE	**28002025**	1,500 mm	40°	95 %	18 pc(s).	0.326 kg
ACL LINEAR LENS 24x1800mm INTENSE	**28002026**	1,800 mm	40°	95 %	18 pc(s).	0.392 kg
ACL LINEAR LENS 24x1200mm BATWING	**28002027**	1,200 mm	batwing	95 %	18 pc(s).	0.275 kg
ACL LINEAR LENS 24x1500mm BATWING	**28002028**	1,500 mm	batwing	95 %	18 pc(s).	0.344 kg
ACL LINEAR LENS 24x1800mm BATWING	**28002029**	1,800 mm	batwing	95 %	18 pc(s).	0.412 kg
ACL LINEAR LENS 24x1200mm ASY	**28002030**	1,200 mm	asymmetric	95 %	18 pc(s).	0.250 kg
ACL LINEAR LENS 24x1500mm ASY	**28002031**	1,500 mm	asymmetric	95 %	18 pc(s).	0.312 kg
ACL LINEAR LENS 24x1800mm ASY	**28002032**	1,800 mm	asymmetric	95 %	18 pc(s).	0.375 kg
ACL LINEAR LENS 24x1200mm DASY	**28002033**	1,200 mm	double asymmetric	92 %	18 pc(s).	0.249 kg
ACL LINEAR LENS 24x1500mm DASY	**28002034**	1,500 mm	double asymmetric	92 %	18 pc(s).	0.311 kg
ACL LINEAR LENS 24x1800mm DASY	**28002035**	1,800 mm	double asymmetric	92 %	18 pc(s).	0.373 kg
ACL Endcap LENS 24mm PSF	**28002669**	–	–	–	3,600 pc(s).	0.003 kg

ACL CLIP 4.3mm

Accessory



Product description

_ Clip for fixation of LED modules with 4.3 mm holes
_ Fast snap on mounting (sheet thickness 0.5 – 1.0 mm for PUSH-FIX and 1 – 2 mm for PUSH-FIX Long)
_ For drilling hole 4 mm
_ Clip made of polycarbonate
_ Minimum sales quantity 500 pcs.

Website

http://www.tridonic.com/28001036

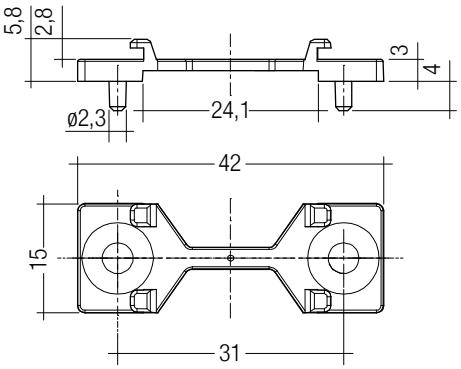
Ordering data

Type	Article number	Colour	Packaging, bag ①	Weight per pc.
ACL CLIP 4.3mm PUSH-FIX	**28001036**	White	500 pc(s).	0.001 kg
ACL CLIP 4,3mm PUSH-FIX Long	**28002314**	Transparent	500 pc(s).	0.001 kg

① Minimum sales quantity 500 pcs.

ACL BRIDGE LLE24/40

Accessory



Product description

_ Enables the fixation of 24 mm wide Tridonic LED modules to fixtures made for 40 mm wide modules
_ Ideal for extruded aluminium gear trays made for 40 mm modules with pre-alignment knobs
_ Clip-on for LINEAR COVER and LINEAR LENS ①
_ For LLE 24 with 280 mm module minimum 2 bridges required
_ For LLE 24 with 560 mm module minimum 3 bridges required
_ Fixation via M3 or M4 countersunk screw, max. tightening torque 0.5 Nm
_ Material: white polycarbonate
_ Minimum sales quantity 600 pcs.

① Beam characteristics will change due to the elevated fixation (see photometric files for details).

Website

http://www.tridonic.com/28001205

Ordering data

Type	Article number	Colour	Packaging, carton	Weight per pc.
ACL BRIDGE LLE24/40 SCREW-FIX	**28001205**	White	600 pc(s).	0.001 kg

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

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 Risk group

LLE 24x1120mm 2600lm ADV6 + LLE 24x1400mm 3250lm ADV6

Forward current	Risk group (IEC 62471)
≤ 562 mA	RG0
> 562 – 800 mA (Imax)	RG1

LLE 24x1120mm 4800lm ADV6 + LLE 24x1400mm 6000lm ADV6

Forward current	Risk group (IEC 62471)
≤ 280 mA	RG0
> 280 – 800 mA (Imax)	RG1

LLE 24x1120mm 8000lm ADV6 + LLE 24x1400mm 10000lm ADV6

Forward current	Risk group (IEC 62471)
≤ 208 mA	RG0
> 208 – 700 mA (Imax)	RG1

1.3 Energy classification

Type	Colour tempera-ture	Forward current	Energy classifi-cation	Energy consumption
LLE 24x1120mm 2600lm 830 HV ADV6	3,000 K	275 mA	C	13 kWh / 1,000 h
LLE 24x1120mm 2600lm 835 HV ADV6	3,500 K	275 mA	B	13 kWh / 1,000 h
LLE 24x1120mm 2600lm 840 HV ADV6	4,000 K	275 mA	B	13 kWh / 1,000 h
LLE 24x1400mm 3250lm 830 HV ADV6	3,000 K	275 mA	C	16 kWh / 1,000 h
LLE 24x1400mm 3250lm 835 HV ADV6	3,500 K	275 mA	C	16 kWh / 1,000 h
LLE 24x1400mm 3250lm 840 HV ADV6	4,000 K	275 mA	B	16 kWh / 1,000 h
LLE 24x1120mm 4800lm 830 HV ADV6	3,000 K	275 mA	C	25 kWh / 1,000 h
LLE 24x1120mm 4800lm 835 HV ADV6	3,500 K	275 mA	C	25 kWh / 1,000 h
LLE 24x1120mm 4800lm 840 HV ADV6	4,000 K	275 mA	B	25 kWh / 1,000 h
LLE 24x1400mm 6000lm 830 HV ADV6	3,000 K	275 mA	C	31 kWh / 1,000 h
LLE 24x1400mm 6000lm 835 HV ADV6	3,500 K	275 mA	C	31 kWh / 1,000 h
LLE 24x1400mm 6000lm 840 HV ADV6	4,000 K	275 mA	B	31 kWh / 1,000 h
LLE 24x1120mm 8000lm 830 HV ADV6	3,000 K	300 mA	C	40 kWh / 1,000 h
LLE 24x1120mm 8000lm 840 HV ADV6	4,000 K	300 mA	B	40 kWh / 1,000 h
LLE 24x1400mm 10000lm 830 HV ADV6	3,000 K	300 mA	C	50 kWh / 1,000 h
LLE 24x1400mm 10000lm 840 HV ADV6	4,000 K	300 mA	B	50 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 … +80 °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 24x1120mm 2600lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	275 mA	self cooling	
25 °C	50 °C	700 mA	1.24 K/W	539 cm²
35 °C	50 °C	275 mA	self cooling	
35 °C	50 °C	700 mA	0.67 K/W	994 cm²
40 °C	50 °C	275 mA	1.66 K/W	401 cm²
40 °C	50 °C	700 mA	0.39 K/W	1721 cm²
45 °C	50 °C	275 mA	0.74 K/W	898 cm²
45 °C	50 °C	700 mA	0.10 K/W	6,385 cm²

LLE 24x1120mm 4800lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	275 mA	2.12 K/W	314 cm²
25 °C	50 °C	700 mA	0.53 K/W	1261 cm²
35 °C	50 °C	275 mA	1.20 K/W	554 cm²
35 °C	50 °C	700 mA	0.25 K/W	2711 cm²
40 °C	50 °C	275 mA	0.74 K/W	898 cm²
40 °C	50 °C	700 mA	0.10 K/W	6,385 cm²
45 °C	50 °C	275 mA	0.28 K/W	2,366 cm²
45 °C	50 °C	700 mA	3.43 K/W	194 cm²

LLE 24x1120mm 8000lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	300 mA	1.20 K/W	556 cm²
25 °C	50 °C	600 mA	0.25 K/W	2,718 cm²
35 °C	50 °C	300 mA	0.65 K/W	1,029 cm²
35 °C	50 °C	600 mA	0.08 K/W	8,804 cm²
40 °C	50 °C	300 mA	0.37 K/W	1,790 cm²
45 °C	50 °C	300 mA	0.10 K/W	6,876 cm²

LLE 24x1400mm 3250lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	275 mA	self cooling	
25 °C	50 °C	700 mA	0.99 K/W	674 cm²
35 °C	50 °C	275 mA	self cooling	
35 °C	50 °C	700 mA	0.54 K/W	1,243 cm²
40 °C	50 °C	275 mA	1.33 K/W	501 cm²
40 °C	50 °C	700 mA	0.31 K/W	2,151 cm²
45 °C	50 °C	275 mA	0.59 K/W	1,123 cm²
45 °C	50 °C	700 mA	0.08 K/W	7,981 cm²

LLE 24x1400mm 6000lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	275 mA	1.70 K/W	393 cm²
25 °C	50 °C	700 mA	0.42 K/W	1,576 cm²
35 °C	50 °C	275 mA	0.96 K/W	693 cm²
35 °C	50 °C	700 mA	0.20 K/W	3,389 cm²
40 °C	50 °C	275 mA	0.59 K/W	1,123 cm²
40 °C	50 °C	700 mA	0.08 K/W	7,981 cm²
45 °C	50 °C	275 mA	0.23 K/W	2,958 cm²

LLE 24x1400mm 10000lm ADV6

ta	tp	Forward current	$R_{th, hs-a}$	Cooling area
25 °C	50 °C	300 mA	0.96 K/W	695 cm²
25 °C	50 °C	600 mA	0.20 K/W	3,398 cm²
35 °C	50 °C	300 mA	0.52 K/W	1,286 cm²
35 °C	50 °C	600 mA	0.06 K/W	11,005 cm²
40 °C	50 °C	300 mA	0.30 K/W	2,237 cm²
45 °C	50 °C	300 mA	0.08 K/W	8,594 cm²

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, 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.

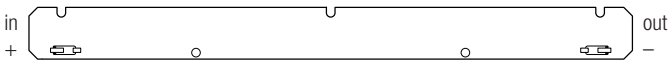
Wrong polarity can damage the LLE.

The LLE module is designed for serial wiring.

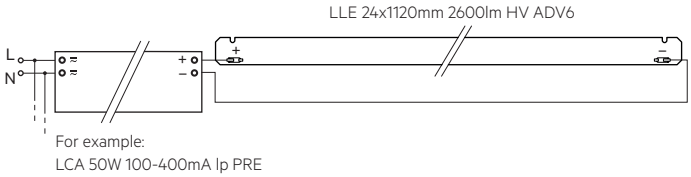
LLE can be operated either from SELV LED drivers or from LED drivers with LV output voltage.

LLE are basic insulated up to 350 / 440 V (if mounted with M4 screws with head diameter 7 mm) 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 350 / 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



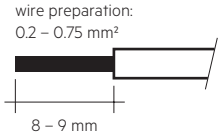
Wiring example



For example:
LCA 50W 100-400mA lp PRE

3.3 Wiring type and cross section

For wiring use stranded wire with ferrules or solid wire from 0.2 to 0.75 mm².
For the push-wire connection you have to strip the insulation (8–9 mm).



To remove the wires use a suitabel tool (e.g. Microcon release pin) 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. 12 screws per module or ACL CLIP 4.3mm.

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.

4.2 Lumen maintenance for LLE 24mm HV ADV6

Forward current	tp temperature	L90 / B10	L90 / B50	L80 / B10	L80 / B50	L70 / B10	L70 / B50
700 mA	55 °C	52k h	52k h	> 102k h	> 102k h	> 102k h	> 102k h
	85 °C	52k h	52k h	> 102k h	> 102k h	> 102k h	> 102k h

L00C03 > 102k h. At tp rated and I rated, based on 10 swichting 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

5. Electrical values

5.1 Declaration of electrical parameters

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

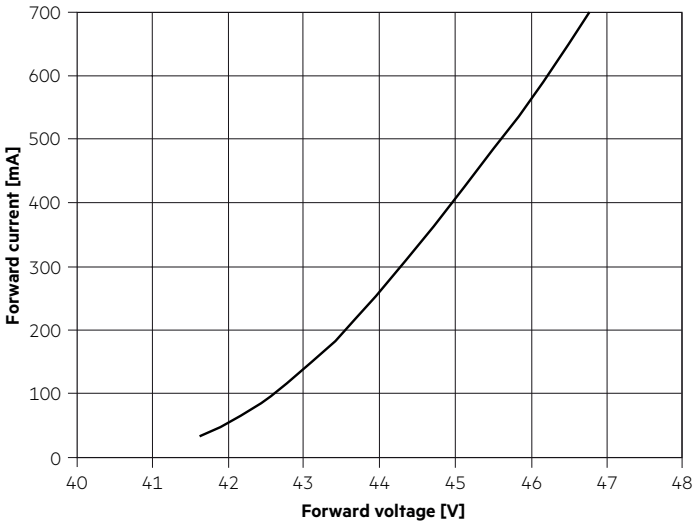
Imax ... Max. permissible continuous operating current incl. The tolerances of the LED driver.

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

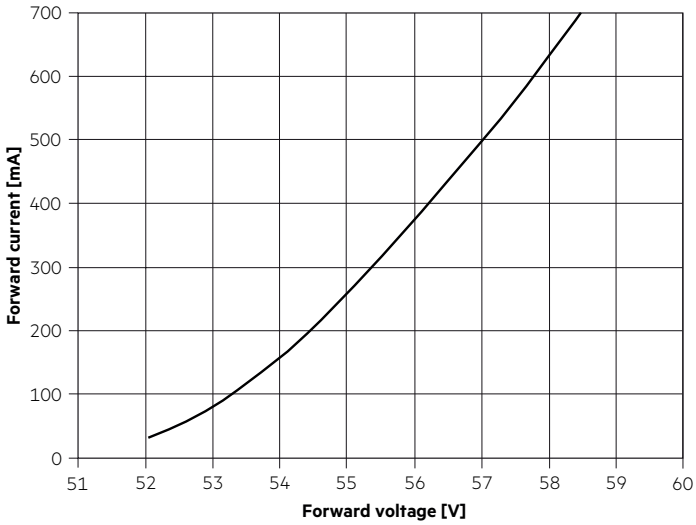
Max. permissible peak current ... The max. output peak current of the LED driver must not exceed this value.

5.2 Typ. forward voltage vs. forward current

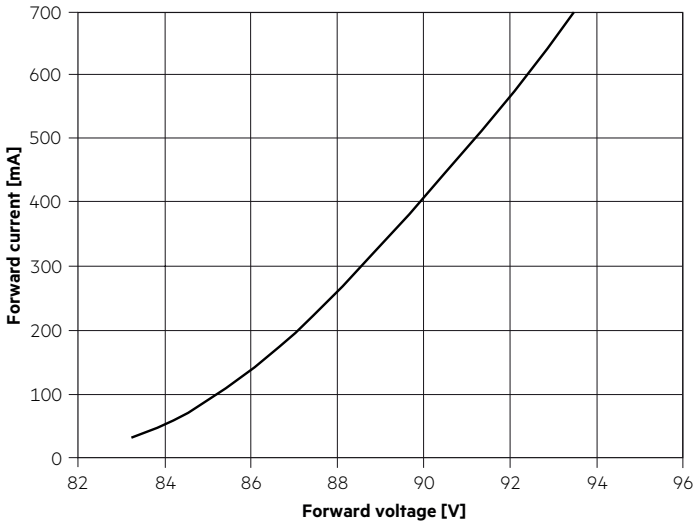
LLE 24x1120mm 2600lm 8xx HV ADV6



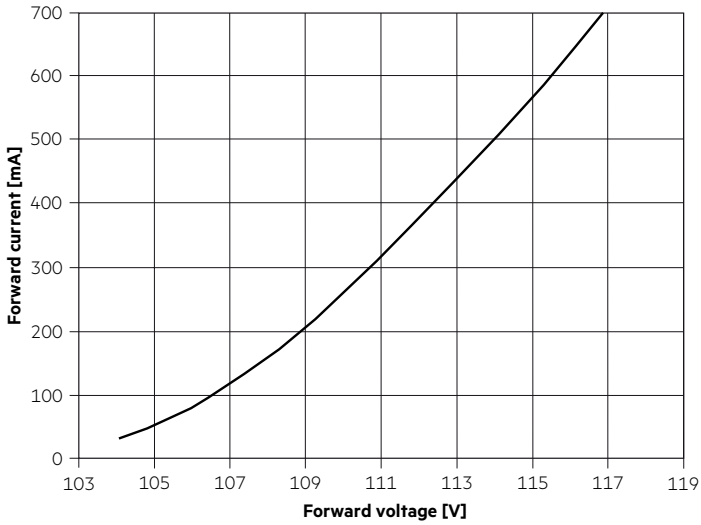
LLE 24x1400mm 3250lm 8xx HV ADV6



LLE 24x1120mm 4800lm 8xx HV ADV6

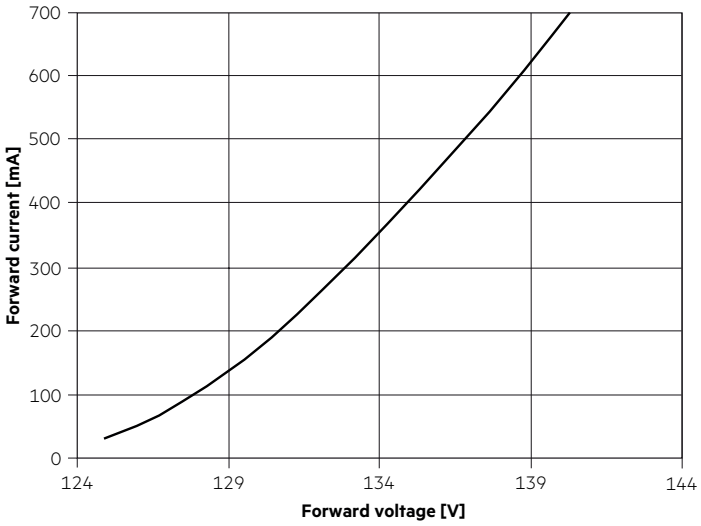


LLE 24x1400mm 6000lm 8xx HV ADV6

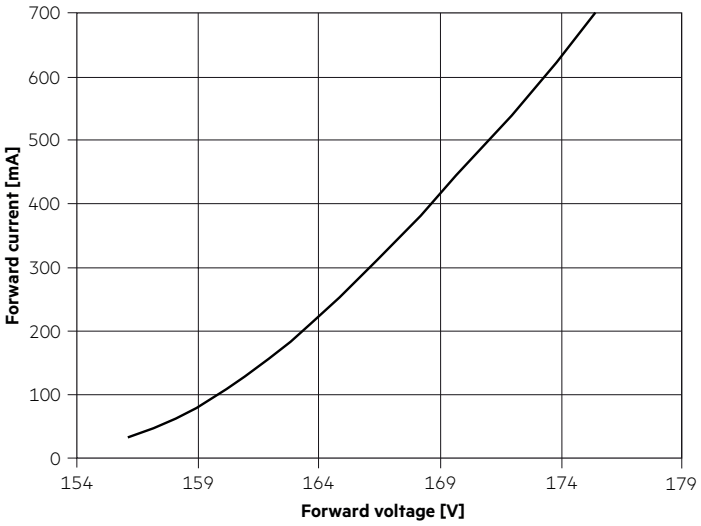


The diagrams are based on statistic values.
The real values can be different.

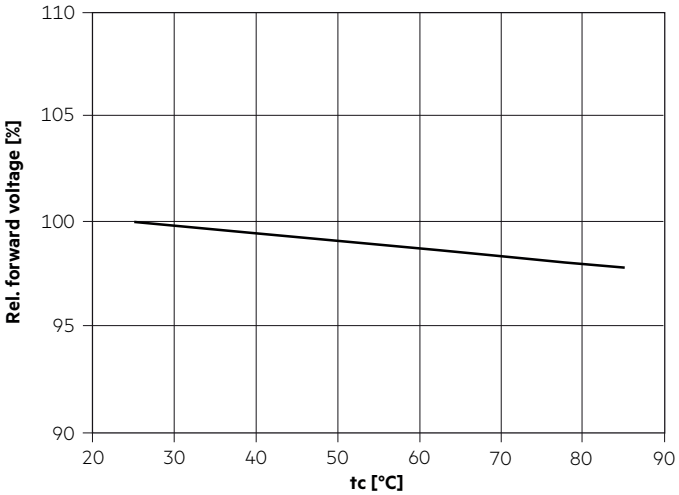
LLE 24x1120mm 8000lm 8xx HV ADV6



LLE 24x1400mm 10000lm 8xx HV ADV6



5.3 Forward voltage vs. tc temperature



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

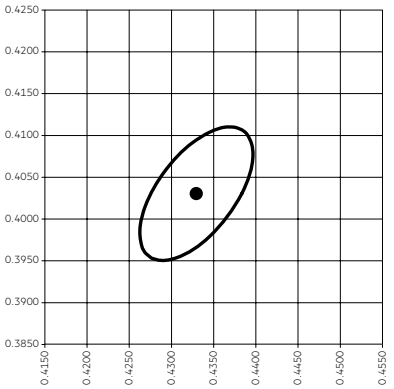
6. Photometric characteristics

6.1 Coordinates and tolerances according to CIE 1931

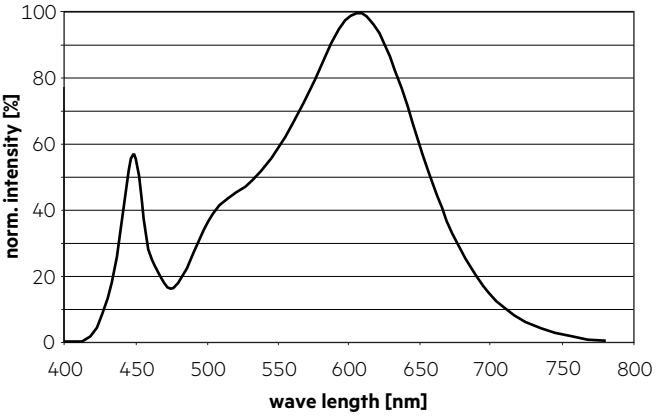
The specified colour coordinates are integral measured by current impulse of 195 mA and a duration of 100 ms.
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4338	0.4030

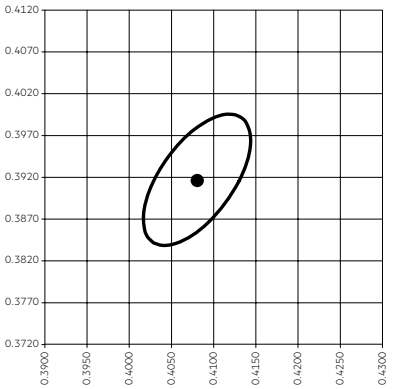


MacAdam Ellipse: 3SDCM

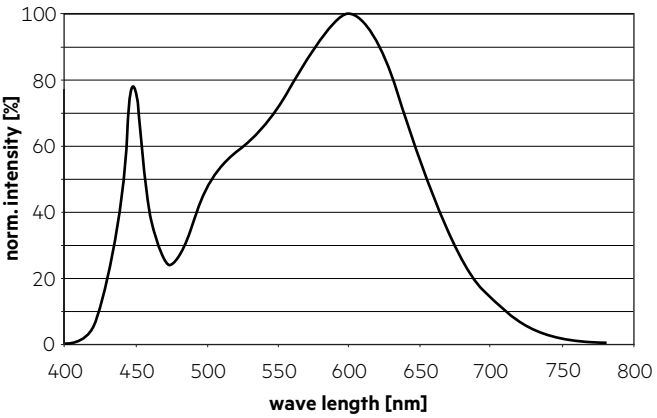


3,500 K

	x0	y0
Centre	0.4073	0.3917

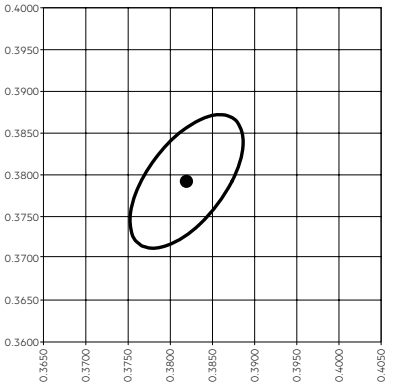


MacAdam Ellipse: 3SDCM

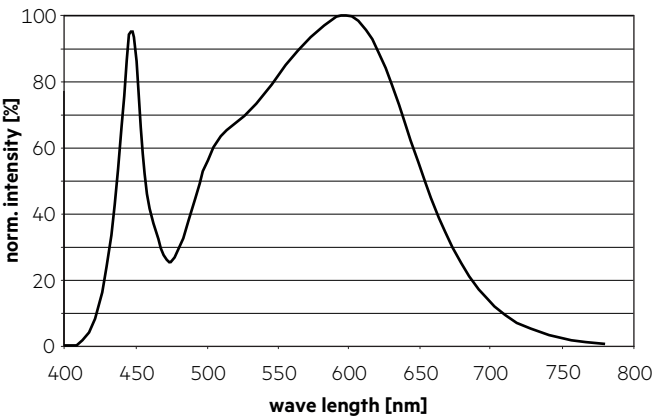


4,000 K

	x0	y0
Center	0.3818	0.3797

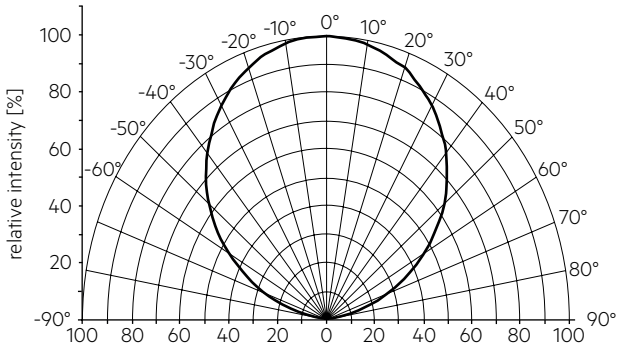


MacAdam Ellipse: 3SDCM



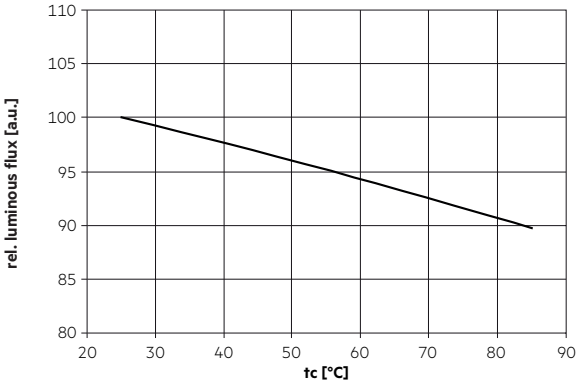
6.2 Light distribution

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

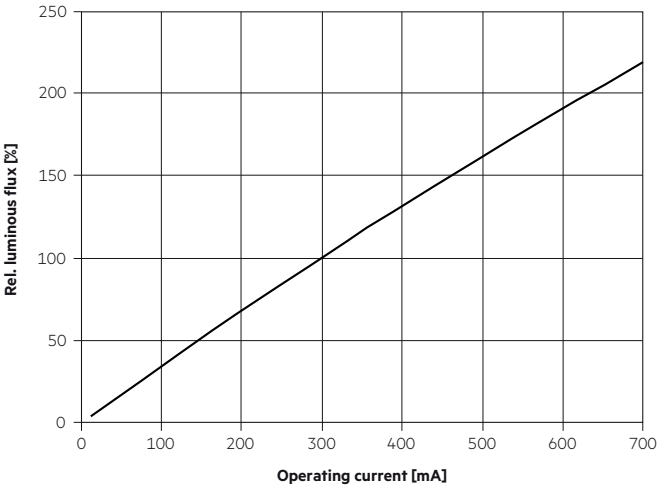


The colour temperature is measured integral over the complete module. The single LED light points can have deviations in the colour coordinates within MacAdam 5.
To ensure an ideal mixture of colours and a homogeneous light distribution a suitable optic (e. g. PMMA diffuser) and a sufficient spacing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

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/

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim.