

LLE premium CRI90 system data sheet

LLE premium

Product description

- Linear Tunable White system with adjustable colour temperature from 3,000 to 6,000 K at constant luminous flux
- Precalibrated set to ensure light quality and high colour consistency, consisting of LED Driver and 3 to 5 LED modules^①
- High colour rendering index CRI > 90
- Outstanding system colour tolerance MacAdam 3 over the full operating area
- High system efficiency up to 106 lm/W at tp = 65 °C
- Low-profile LED Driver with digital interface (DALI Device Type 8, DSI, switchDIM, colourTEMPERATURE)
- Linear LED modules with 700 or 1,500 lm
- Dimming range 10 – 100 % without change of colour temperature
- Long life-time of 50,000 h and 5-year system guarantee



Ordering data

Type	Article number	System components
LLE 24x280mm 3x700lm 930-960 PRE KIT	89602734	1 LED Driver + 3 LED modules at 700 lm
LLE 24x280mm 4x700lm 930-960 PRE KIT	89602735	1 LED Driver + 4 LED modules at 700 lm
LLE 24x280mm 5x700lm 930-960 PRE KIT	89602736	1 LED Driver + 5 LED modules at 700 lm
LLE 24x280mm 3x1500lm 930-960 PRE KIT	89602737	1 LED Driver + 3 LED modules at 1,500 lm
LLE 24x280mm 4x1500lm 930-960 PRE KIT	89602738	1 LED Driver + 4 LED modules at 1,500 lm
LLE 24x280mm 5x1500lm 930-960 PRE KIT	89602739	1 LED Driver + 5 LED modules at 1,500 lm



Technical data Module LLE premium, page 2

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Specific technical data

Type	Photometric code	Typ. forward current ^③	Typ. luminous flux at tp = 25 °C ^②	Typ. luminous flux at tp = 65 °C ^②	Typ. power consumption at tp = 65 °C ^③	Efficacy of the system at tp = 25 °C	Efficacy of the system at tp = 65 °C	Colour rendering index CRI ^④	Energy classification
Operating with LCAI 38 W 125 mA TW Ip									
LLE 24x280mm 3x700lm 930-960 PRE KIT	930/349 – 960/349	125 mA	2,100 lm	2,000 lm	20 W	106 lm/W	100 lm/W	> 90	A+
LLE 24x280mm 4x700lm 930-960 PRE KIT	930/349 – 960/349	125 mA	2,800 lm	2,650 lm	26 W	108 lm/W	102 lm/W	> 90	A+
LLE 24x280mm 5x700lm 930-960 PRE KIT	930/349 – 960/349	125 mA	3,500 lm	3,350 lm	32 W	111 lm/W	105 lm/W	> 90	A+
Operating with LCAI 75 W 250 mA TW Ip									
LLE 24x280mm 3x1500lm 930-960 PRE KIT	930/349 – 960/349	250 mA	4,230 lm	4,020 lm	40 W	104 lm/W	98 lm/W	> 90	A+
LLE 24x280mm 4x1500lm 930-960 PRE KIT	930/349 – 960/349	250 mA	5,640 lm	5,360 lm	52 W	106 lm/W	101 lm/W	> 90	A+
LLE 24x280mm 5x1500lm 930-960 PRE KIT	930/349 – 960/349	250 mA	7,050 lm	6,700 lm	63 W	110 lm/W	104 lm/W	> 90	A+

^① Mixing of components from different sets is not allowed due to the pre-calibration of the system.

^② Tolerance range for optical data over the CCT range: ±5 %.

^③ Tolerance range for electrical data: ±5 %.

^④ Colour temperature and CRI according to CIE 1931.



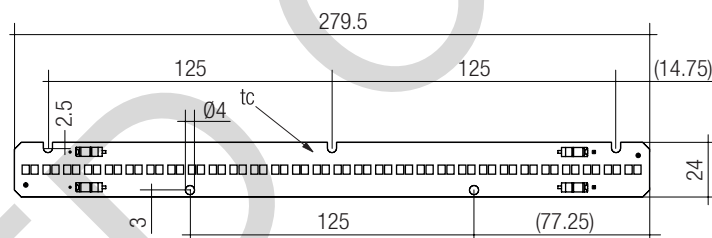
Module LLE premium CRI90
LLE premium

Product description

- Linear Tunable White LED module with 2,700 and 6,500 K SMT packages
- High module efficacy up to 122 lm/W at $t_p = 65^\circ\text{C}$
- High colour rendering index CRI > 90
- Low tolerances for colour temperature (MacAdam 3)
- Low light current tolerances
- Excellent thermal management
- Ideal for linear and panel lights
- Long life-time: 50,000 hours
- 5-year guarantee

Technical data

Beam characteristic	120°
Ambient temperature t_a ^①	-25 ... +55 °C
t_p rated	65 °C
t_c	80 °C
Irated for LLE-24-280-700	125 mA
Irated for LLE-24-280-1500	250 mA
I _{max} for LLE-24-280-700	150 mA
I _{max} for LLE-24-280-1500	300 mA
Max. DC forward current for LLE-24-280-700	165 mA
Max. DC forward current for LLE-24-280-1500	330 mA
Max. permissible LF current ripple for LLE-24-280-700	180 mA
Max. permissible LF current ripple for LLE-24-280-1500	360 mA
Max. permissible peak current for LLE-24-280-700	240 mA / max. 10 ms
Max. permissible peak current for LLE-24-280-1500	480 mA / max. 10 ms
Max. working voltage for insulation ^{②④}	500 V
Insulation test voltage	2 kV
CTI of the printed circuit board	≥ 600
ESD classification	severity level 4
Risk group (EN 62471:2008)	0
Classification acc. to IEC 62031	Built-in
Type of protection	IP00



Standards, page 7

Colour temperatures and tolerances, page 10

Product description, page 7

Specific technical data

Type	Channel	Photometric code	Typ. luminous flux at $t_p = 25^\circ\text{C}$ ^①	Typ. luminous flux at $t_p = 65^\circ\text{C}$ ^①	Typ. forward current ^②	Min. forward voltage at $t_p = 65^\circ\text{C}$ ^②	Max. forward voltage at $t_p = 25^\circ\text{C}$ ^②	Typ. power consumption at $t_p = 65^\circ\text{C}$ ^②	Efficacy of the module at $t_p = 25^\circ\text{C}$	Efficacy of the module at $t_p = 65^\circ\text{C}$	Colour rendering index CRI ^③
LLE 24x280mm 700lm 927-965 PRE	WW	827/349	670 lm	630 lm	125 mA	42.7 V	48.4 V	5.6 W	115 lm/W	113 lm/W	90
	CW	865/349	720 lm	685 lm	125 mA	42.7 V	48.4 V	5.6 W	124 lm/W	122 lm/W	90
LLE 24x280mm 1500lm 927-965 PRE	WW	827/349	1,330 lm	1,260 lm	250 mA	42.7 V	48.4 V	11.3 W	115 lm/W	113 lm/W	90
	CW	865/349	1,440 lm	1,370 lm	250 mA	42.7 V	48.4 V	11.3 W	124 lm/W	122 lm/W	90

^① Tolerance range for optical data over the CCT range: ±5 %.

^② Tolerance range for electrical data: ±5 %.

^③ CRI according to CIE 1931.

^④ Mounted with non-conductive element like ACL CLIP 4.3mm.

IP20      

Driver LCAI TW Ip

Product description

- LED Driver for LLE premium modules
- Output power: 38 W or 75 W
- Power input on standby < 0.3 W

Properties

- Low-profile LED Driver with digital interface (DALI Device Type 8, DSI, switchDIM, colourTEMPERATURE)
- switchDIM and colourTEMPERATURE with memory function^{①②}
- Powerless switching via digital interface (no need for switching via mains)
- Intelligent Temperature Guard (protection against thermal damage)
- Short-circuit shutdown feature with one restart (after 0.5 s)
- Overload protection with one restart (after 0.5 s)

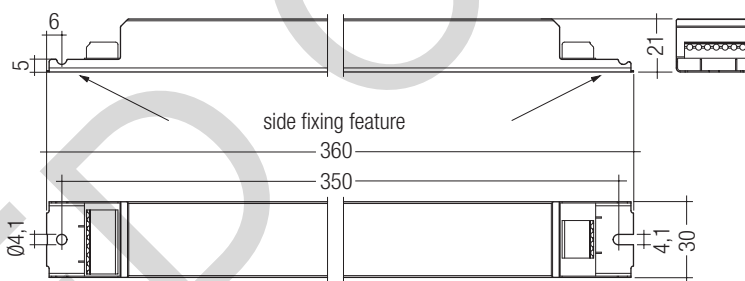
Technical data

Rated supply voltage	220 – 240 V
Input voltage range, AC	198 – 264 V
Input voltage range, DC	176 – 280 V
Rated current (at 230 V 50 Hz) for 38 W	0.18 A
Rated current (at 230 V 50 Hz) for 75 W	0.35 A
Mains frequency	0 / 50 / 60 Hz
Efficiency for 38 W	90 %
Efficiency for 75 W	93 %
λ (at 230 V 50 Hz, full load)	0.96
Control input ^{① ②}	DSI, DALI, switchDIM, colourTEMPERATURE
Stand-by power	< 0.3 W
Max. output voltage (no-load voltage)	270 V
Dimming range	10 – 100 %
PWM frequency	200 – 500 Hz
Set up time (at 230 V 50 Hz)	< 0.5 s
Switchover time (AC/DC) ^③	< 1 s
Leakage current (PE)	150 μ A
t_a operating (at life-time 50,000 h) for 38 W	-25 ... +60 °C
t_a operating (at life-time 50,000 h) for 75 W	-25 ... +55 °C
Max. casing temperature t_c (at life-time 50,000 h) for 38 W	70 °C
Max. casing temperature t_c (at life-time 50,000 h) for 75 W	75 °C

^① In DC operation the last set colour is used.

^② No colourTEMPERATURE mode at DC operation.

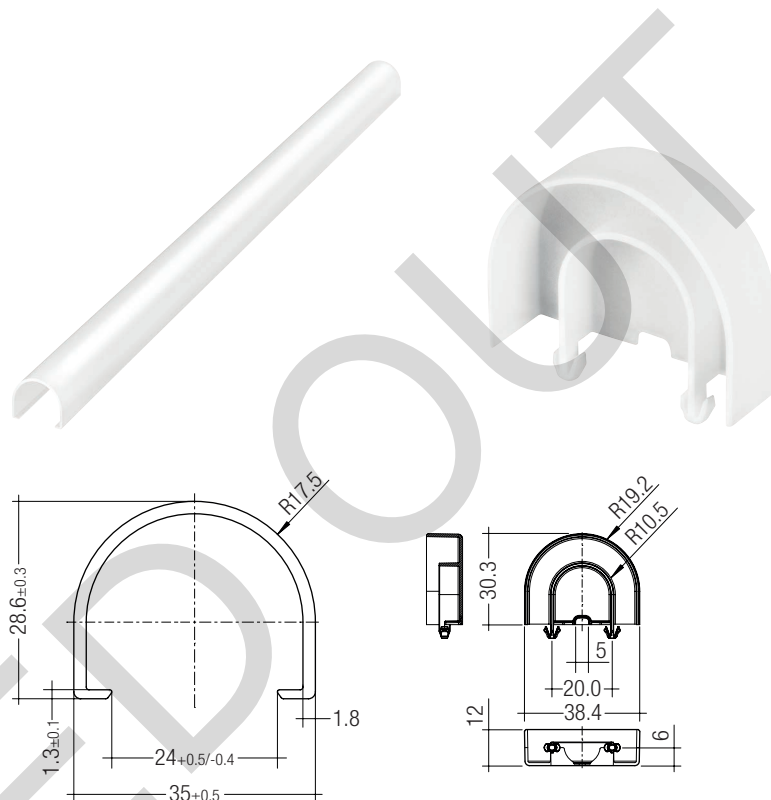
^③ Valid for immediate change of power supply type otherwise the starting time is valid.



Product description, page 11

Product description

- LINEAR COVER / ENDCAP for LLE 24
- Protection against direct touch for non-SELV applications (recommendation: use all fixing points)
- Mounting COVER: Fast snap on mounting on to LLE 24 with clips or plastic washers
- Mounting ENDCAP: Fast snap on mounting (sheet thickness 0.5 – 1.0 mm), for drilling hole 4 mm
- High transmission: transparent 94 %, semi-transparent 87 %, diffuse 76 %
- Linear cover made of PMMA
- Endcap made of Polycarbonat
- Tolerances LINEAR COVER: ± 1 mm for 597 mm length (ends finished), + 20 mm for 1,200 / 1,500 / 1,600 / 1,800 mm length (ends raw)



Ordering data

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

Product description

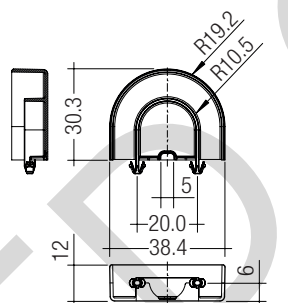
- ENDCAP for LLE 24
- PUSH-FIX: Fast snap on mounting (sheet thickness 0.5 – 1.0 mm), for drilling hole 4 mm
- SCREW-FIX: Screw mounting with EJOT Delta PT WN 5451 30x8, tightening torque 0.7 Nm
- Made of Polycarbonat



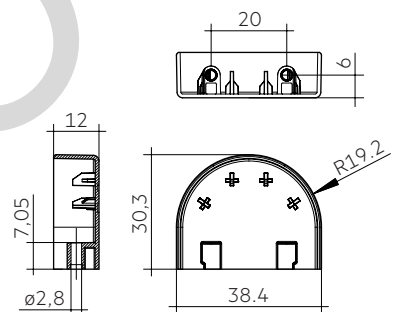
ACL ENDCAP LLE24 PUSH-FIX



ACL ENDCAP LLE24 SCREW-FIX



ACL ENDCAP LLE24 PUSH-FIX



ACL ENDCAP LLE24 SCREW-FIX

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

Product description LINEAR LENS

- Linear lens for LLE 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 24 with clips or plastic washers
- Linear lense made of PMMA
- Available lengths: 1,200, 1,500, 1,600 and 1,800 mm, Tolerance: + 10 mm, at 1,600 mm length ± 20 mm tolerance and raw ends
- 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



ACL LINEAR LENS 24mm 60°



ACL LINEAR LENS 24mm 90°



ACL LINEAR LENS 24mm INTENSE



ACL LINEAR LENS 24mm BATWING



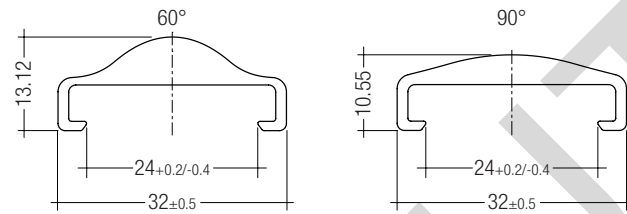
ACL LINEAR LENS 24mm ASY



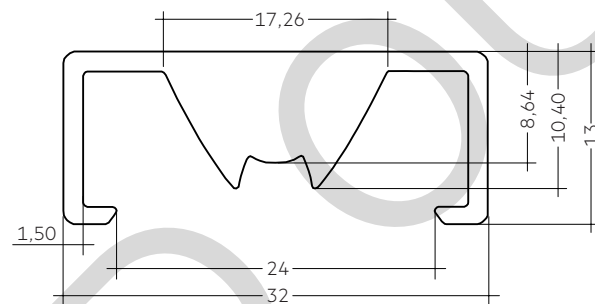
ACL LINEAR LENS 24mm DASY



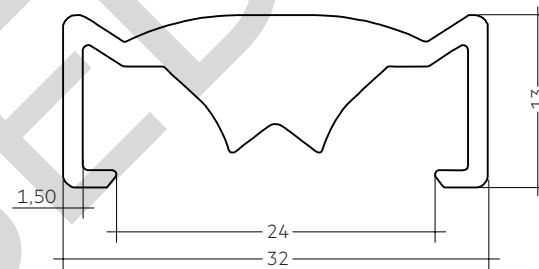
ACL Endcap LENS 24mm PSF



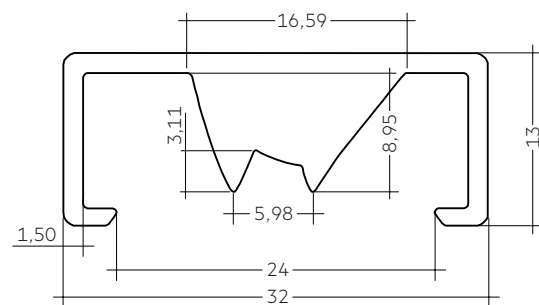
ACL LINEAR LENS 24mm 60° and 90°



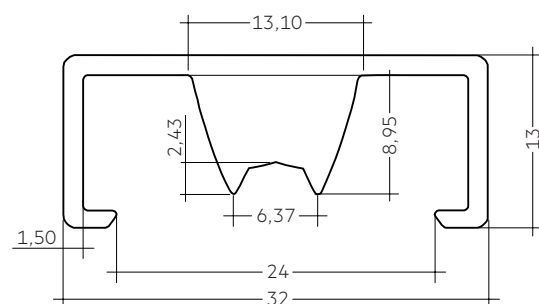
ACL LINEAR LENS 24mm INTENSE



ACL LINEAR LENS 24mm BATWING



ACL LINEAR LENS 24mm ASY



ACL LINEAR LENS 24mm DASY



Ordering data

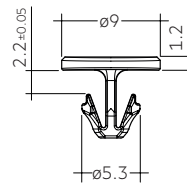
Type	Article number	Beam characteristic	Efficiency	Packaging carton	Weight per pc.
ACL LINEAR LENS 24x1200mm 60°	28001428	60°	97 %	21 pc(s).	0.196 kg
ACL LINEAR LENS 24x1200mm 90°	28001429	90°	97 %	21 pc(s).	0.165 kg
ACL LINEAR LENS 24x1600mm 60°	28000953	60°	97 %	21 pc(s).	0.261 kg
ACL LINEAR LENS 24x1600mm 90°	28000955	90°	97 %	21 pc(s).	0.221 kg
ACL LINEAR LENS 24x1200mm INTENSE	28002024	40°	95 %	18 pc(s).	0.261 kg
ACL LINEAR LENS 24x1500mm INTENSE	28002025	40°	95 %	18 pc(s).	0.326 kg
ACL LINEAR LENS 24x1800mm INTENSE	28002026	40°	95 %	18 pc(s).	0.392 kg
ACL LINEAR LENS 24x1200mm BATWING	28002027	batwing	95 %	18 pc(s).	0.275 kg
ACL LINEAR LENS 24x1500mm BATWING	28002028	batwing	95 %	18 pc(s).	0.344 kg
ACL LINEAR LENS 24x1800mm BATWING	28002029	batwing	95 %	18 pc(s).	0.412 kg
ACL LINEAR LENS 24x1200mm ASY	28002030	asymmetric	95 %	18 pc(s).	0.250 kg
ACL LINEAR LENS 24x1500mm ASY	28002031	asymmetric	95 %	18 pc(s).	0.312 kg
ACL LINEAR LENS 24x1800mm ASY	28002032	asymmetric	95 %	18 pc(s).	0.375 kg
ACL LINEAR LENS 24x1200mm DASY	28002033	double asymmetric	92 %	18 pc(s).	0.249 kg
ACL LINEAR LENS 24x1500mm DASY	28002034	double asymmetric	92 %	18 pc(s).	0.311 kg
ACL LINEAR LENS 24x1800mm DASY	28002035	double asymmetric	92 %	18 pc(s).	0.373 kg
ACL Endcap LENS 24mm PSF	28002669	–	–	720 pc(s).	0.003 kg

Product description

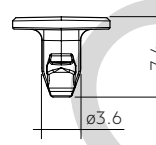
- Clip for fixation of LED modules with 4.3 mm holes
- Fast snap on mounting (sheet thickness 0.5 – 1.0 mm for PUSH-FIX and 1 – 2 mm for PUSH-FIX Long)
- For drilling hole 4 mm
- Clip made of Polycarbonat



ACL CLIP 4.3mm PUSH-FIX



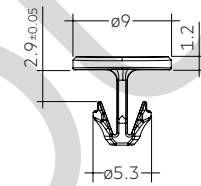
ACL CLIP 4.3mm PUSH-FIX



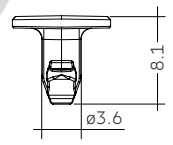
ACL CLIP 4.3mm PUSH-FIX Long



ACL CLIP 4.3mm PUSH-FIX Long



ACL CLIP 4.3mm PUSH-FIX Long



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.

Module LLE premium

Product description

Standards

EN 62031
EN 62471
EN 61347-1
EN 61547
EN 61000-4-6

Photometric code

Key for photometric code, e. g. 930 / 349

1 st digit	2 nd + 3 rd digit	4 th digit	5 th digit	6 th digit
Code CRI	Colour temperature in Kelvin x 100	MacAdam initial	MacAdam 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 %

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.

Therefore the LLE needs to be mounted onto a heat sink.

Tridonic's excellent thermal design for the LLE products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

tc point, ambient temperature and life-time

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

For the 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.

Heat sink values

LLE premium 700 lm

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25°C	65°C	125 mA	9.8 K/W	68 cm ²
35°C	65°C	125 mA	7.3 K/W	90 cm ²
45°C	65°C	125 mA	4.8 K/W	135 cm ²

LLE premium 1,500 lm

ta	tp	Forward current	R _{th, hs-a}	Cooling area
25°C	65°C	250 mA	5.1 K/W	131 cm ²
35°C	65°C	250 mA	3.8 K/W	176 cm ²
45°C	65°C	250 mA	2.5 K/W	268 cm ²

Notes

The actual cooling surface can differ because of the material, the structural shape, outside influences and the installation situation. LED modules have to be insulated against the heat sink with a insulating thermal interface material. The LED modules must rest flat on the heat sink.

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 5 nonconductive elements (like ACL Clip 4.3 mm) per module.



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.



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>

Selection of the LED Driver

The LLE premium can only be operated with the Driver LCAI TW Ip.



Only components out of a single set shall be connected. Mixing the sets will invalidate the system calibration and will decrease the system performance considerably.

Storage and humidity

Storage temperature	-30 ... +80 °C
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Operation only in non condensing environment.
Humidity during processing of the module should be between 30 to 70 %.

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 have 70 % of its initial luminous flux after the stated operating time. 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 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.

Lumen maintenance for LLE premium

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

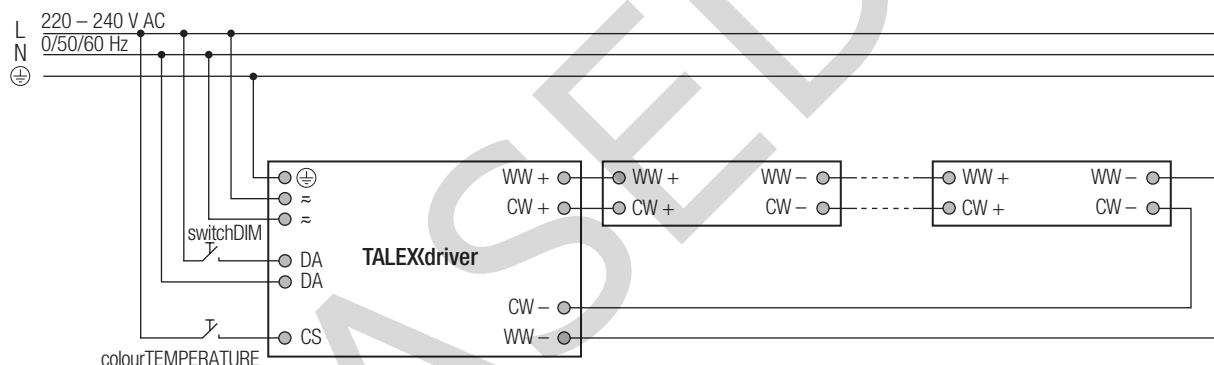
LLE 24x280mm 700lm

Forward current	tp tempera- ture	L90 / B10	L90 / B50	L80 / B10	L80 / B50	L70 / B10	L70 / B50
125 mA	55 °C	36,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	60 °C	26,000 h	>50,000 h	49,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	19,000 h	45,000 h	37,000 h	>50,000 h	>50,000 h	>50,000 h
	70 °C	14,000 h	33,000 h	28,000 h	50,000 h	41,000 h	>50,000 h

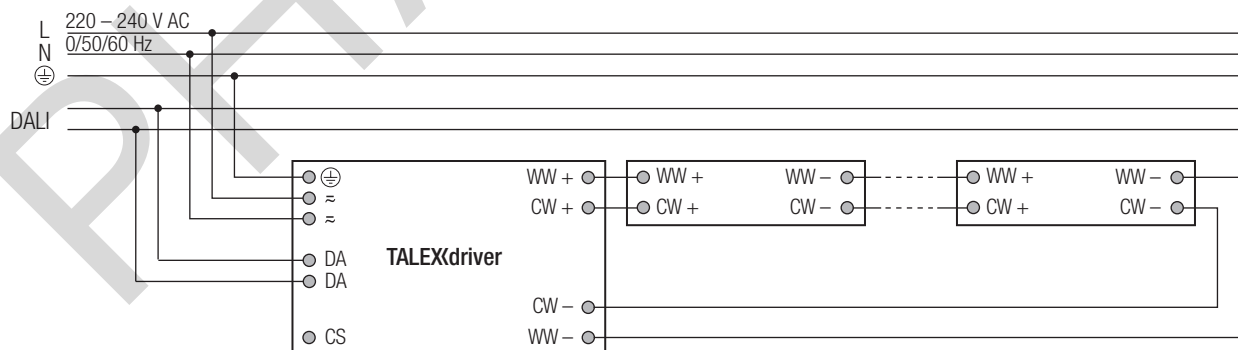
LLE 24x280mm 1500lm

Forward current	tp tempera- ture	L90 / B10	L90 / B50	L80 / B10	L80 / B50	L70 / B10	L70 / B50
250 mA	55 °C	33,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h	>50,000 h
	60 °C	24,000 h	>50,000 h	45,000 h	>50,000 h	>50,000 h	>50,000 h
	65 °C	18,000 h	41,000 h	34,000 h	>50,000 h	>50,000 h	>50,000 h
	70 °C	13,000 h	30,000 h	26,000 h	>50,000 h	39,000 h	>50,000 h

Wiring diagram for switchDIM and colourTEMPERATURE for the Engine LLE premium

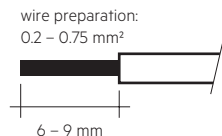


Wiring diagram for DALI for the Engine LLE premium



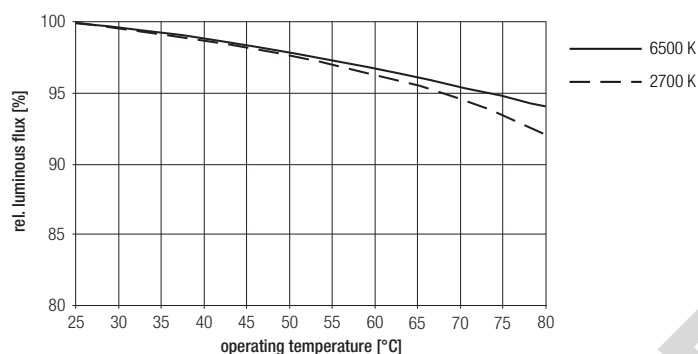
Wiring type and cross section

The wiring can be stranded or solid wires with a cross section of 0.2 to 0.75 mm². For the push-wire connection you have to strip the insulation (6–9 mm).



To remove the wires use a suitable tool (e.g. Microcon release pin) or through twist and pull.

Relative light flux vs. operating temperature



Optical characteristics LLE premium

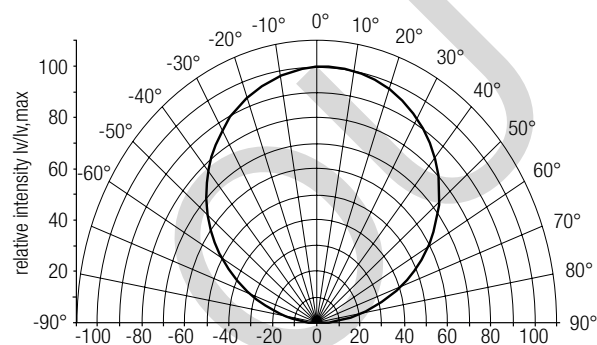
The optical design of the LLE product line ensures optimum homogeneity for the light distribution.



The colour temperature is measured integral over the complete module.

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. 6 cm) should be used.

Light distribution

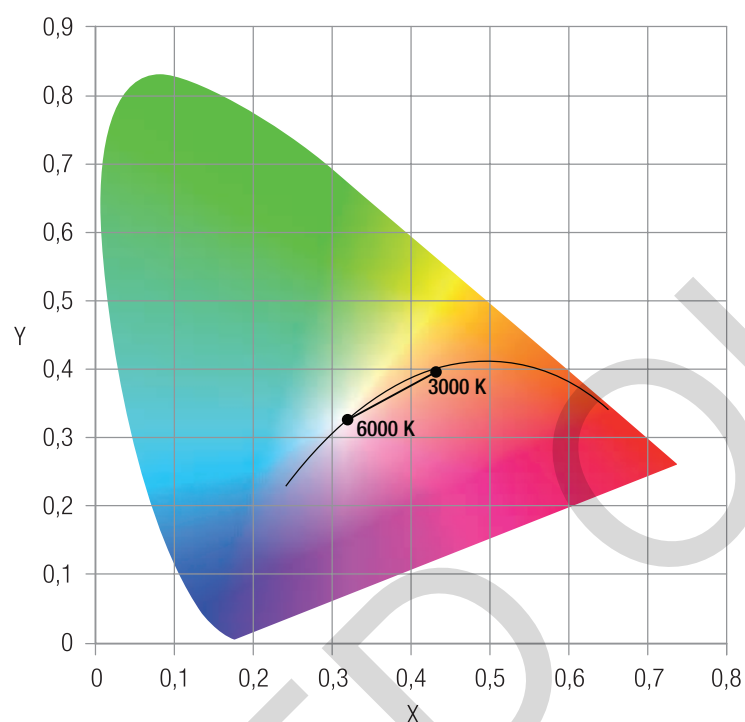


The diagrams are based on statistic values.

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

Coordinates and tolerances according to CIE 1931

The specified colour coordinates are central measured by a current impulse with typical values of module and a duration of 100 ms.
The ambient temperature of the measurement is $t_a = 25^\circ\text{C}$.
The measurement tolerance of the colour coordinates are ± 0.01 .



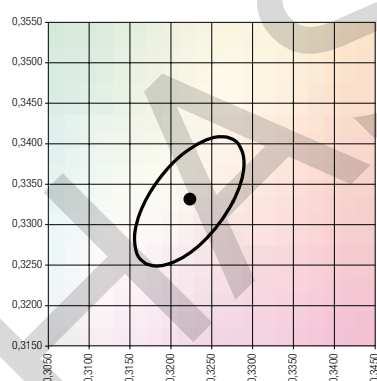
6,000 K

	x0	y0
Centre	0.3220	0.3330

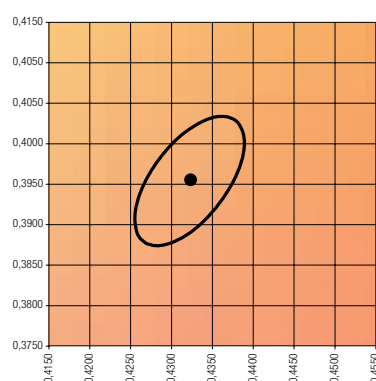
3,000 K

	x0	y0
Centre	0.4325	0.3955

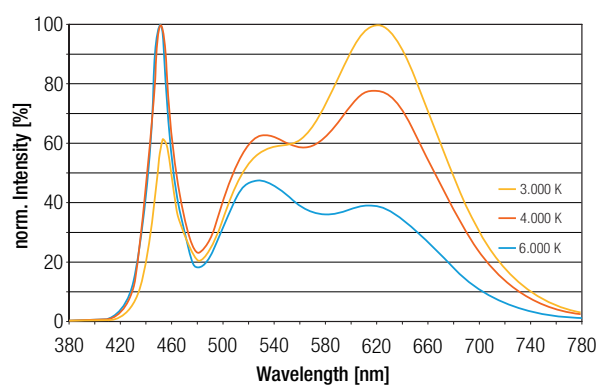
MacAdam ellipse: 3SDCM



MacAdam ellipse: 3SDCM



Colour spectrum at different colour temperatures



Driver LCAI TW Ip
Product description

Standards

EN 61347-1
EN 61347-2-13
EN 62384
EN 61000-3-2
EN 61547
EN 55015
EN 62493
EN 62386-101
EN 62386-102
EN 62386-209 (DALI DEVICE Type 8)

Control input (DA/D1, DA/D2)

Digital DALI/DSI signal or switchDIM can be wired on the same terminals (DA/D1 and DA/D2).

Digital signal DALI/DSI

The control input is non-polar and protected against accidental connection with a mains voltage up to 264 V. The control signal is not SELV. Control cable has to be installed in accordance to the requirements of low voltage installations. Different functions depending on each module.

Colour types

Supported colour types according to DALI Device Type 8:

- colour temperature (colourTEMPERATURE)

Thermal protection of the unit

The unit also has an ITG (Intelligent Temperature Guard). This protects the LCAI TW Ip from thermal overload by reducing the output power or switching off in case of operation above the thermal limits of the luminaire or ballast. Depending on the luminaire design, the ITG operates at about 12 °C (±5 °C) above tc temperature.

Control via switchDIM and colourTEMPERATURE

A conventional double pushbutton can be used to control the system via switchDIM and colourTEMPERATURE. One of the pushbuttons is used to set the colour temperature, the other to set the dimming level.

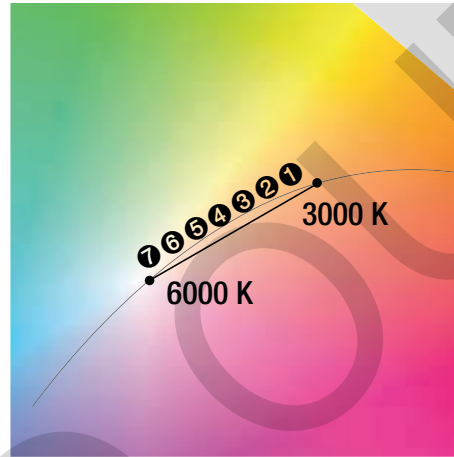


Pushbuttons with glow lamps affect the switchDIM and colourTEMPERATURE and should therefore not be used for this purpose.

For control via a double pushbutton different settings can be made:

- Setting the colour temperature via colourTEMPERATURE mode with 7 predefined values between 3,000 and 6,000 K.
- Stepless setting of the dimming level between 10 and 100 %.
- These values can be changed via masterCONFIGURATOR.

colourTEMPERATURE mode



**Location of the predefined
colour temperatures**

1	3.000 K
2	3.500 K
3	4.000 K
4	4.500 K
5	5.000 K
6	5.500 K
7	6.000 K

Setting the colour temperature

The procedure for setting the colour temperature mode (colourTEMPERATURE):

- Press the pushbutton briefly (approx. 1 s) to advance the colour temperature by one step



When reaching the maximum value the LED module will flash shortly. Another press on the pushbutton will switch the colour temperature immediately to the minimum value.

- Alternatively the colour temperature could be changed via DALI device type 8 control system.

For further information please refer to the brochure entitled "Technical Design-In-Guide LLE premium".

Dimming

Dimming range 10 % to 100 %

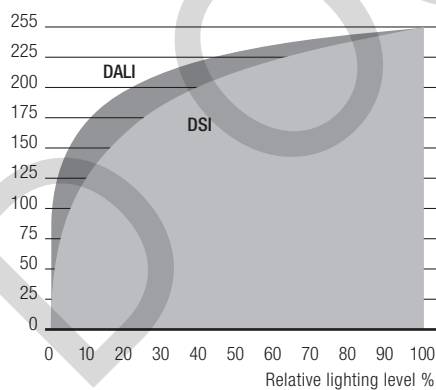
Digital control with:

- DSI signal: 8 bit Manchester Code
Speed 10 % to 100 % in 1.4 s
- DALI signal: 16 bit Manchester Code
Speed 10 % to 100 % in 0.1 s
Programmable parameter:
Minimum dimming level
Maximum dimming level
Default minimum = 10 %
Programmable range $10 \% \leq \text{MIN} \leq 100 \%$
Default maximum = 100 %
Programmable range $100 \% \geq \text{MAX} \geq 10 \%$

Dimming curve is adapted to the eye sensitiveness.

Dimming characteristics

Digital dimming value



Dimming characteristics as seen by the human eye

Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max}	time
LCAI 38 W 125 mA TW Ip	22	30	40	58	11	15	20	29	23 A	290 µs
LCAI 75 W 250 mA TW Ip	14	20	28	38	7	10	14	19	26 A	350 µs

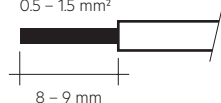
Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

Type	THD	3	5	7	9	11
LCAI 38 W 125 mA TW Ip	< 12	9	5	4	1	2
LCAI 75 W 250 mA TW Ip	< 9	6	5	4	3	2

Wiring type and cross section

Solid wire with a cross section of 0.5 – 1.5 mm². Strip 8 – 9 mm of insulation from the cables to ensure perfect operation of terminals.

wire preparation:
0.5 – 1.5 mm²



Wiring instructions

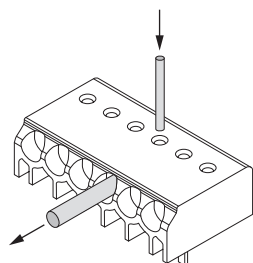
The secondary leads should be separated from the mains connections and wiring for good EMC performance.

The maximum lead length on secondary side is 1.5 m. For a good EMC performance keep the LED wiring as short as possible.

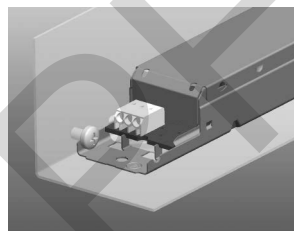
Furthermore, the wiring of the individual channels has to be separated and the use of twisted pairs is not recommended.

Release of the wiring

Loosen wire through twisting and pulling or using a Ø 1 mm release tool.



Side fixing feature



Screw M4, screw head diameter 8–10 mm

Miscellaneous

Additional information

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

Guarantee conditions at www.tridonic.com → Services

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