



11/2023

Technical application guide

PrevaLED® Core G7

LED modules

OSRAM

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Please note:

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1 Introduction

1.1 System overview

Smaller dimensions – larger selection – higher efficiency!

Today, while serving an increasing number of applications, spotlights and downlights are becoming more and more efficient and smaller and smaller in size. Whether in general lighting, shop lighting or special applications, the components must be suitable for use in a variety of luminaires.

The new product design of the PrevaLED® Core G7 enables optimized luminaire designs due to a reduced loss of luminous flux. Thanks to its particularly low optical contact area (OCA) height of just 3.5 mm and its small light-emitting surface (LES) with diameters of only 10 or 15 mm, the reflector can be positioned very close to the light source and enables an improved light coupling and beam control.

Both of these are ideal prerequisites for designing luminaires that feature optimized lighting technology and smaller overall dimensions.

Take your pick from a very large spectrum of power ranges, color temperatures and light qualities:

- 1000, 2000, 3000 or 5000lm
- 2700, 3000, 3500 or 4000K
- CRI > 80 or > 90

Depending on the application, we recommend the combination of PrevaLED® Core G7 with our OPTOTRONIC® or ICUTRONIC® Compact LED drivers for an optimal system solution (please refer to chapter 3.2).

Areas of application

- Spotlighting in shops and retail
- Downlighting and wall lighting in offices, corridors, meeting rooms, workplaces
- Decorative and functional lighting in hospitality applications (e.g. hotels, restaurants)
- Functional lighting in public and commercial buildings

Product benefits

- Easy integration thanks to very compact form factor
- Easy cooling due to optimized efficiency and high maximum operation temperature
- High LED driver flexibility allows cost-effective and intelligent systems
- 5 year guarantee

Product features

- Complete portfolio with varying luminous flux, color temperature, color rendering
- Available with color temperatures: 2,700 K, 3,000 K, 3,500 K or 4,000 K
- High module efficacy: up to 168 lm/W at $t_p = 65^\circ\text{C}$
- CE-marked
- Lifetime (L80/B10): 60,000 h (temperature at $t_c = 65^\circ\text{C}$)



PL-CORE-G7 with LES 15



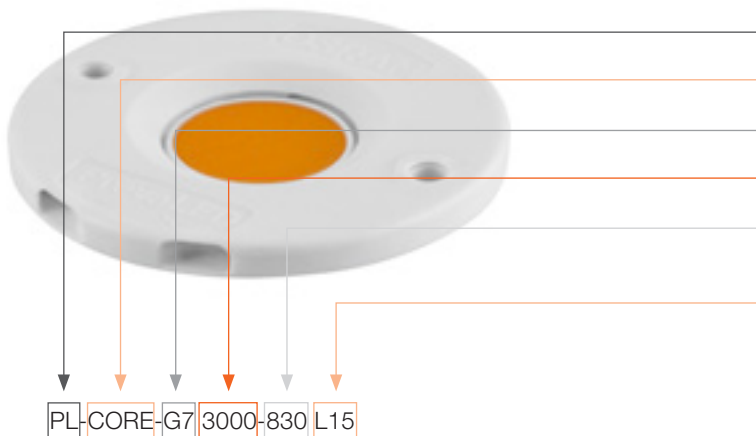
PL-CORE-G7 with LES 10

1.2 Ordering information

PrevaLED® Core G7 LED modules

Product reference	Product number (EAN 10)	Nominal luminous flux [lm]	CRI	Color temperature [K]	LES category
PL-CORE-G7 1000 -827 L10	4052899 537583	1000	≥ 80	2700	LES 10
PL-CORE-G7 1000 -830 L10	4052899 537606	1000	≥ 80	3000	LES 10
PL-CORE-G7 1000 -835 L10	4052899 537620	1000	≥ 80	3500	LES 10
PL-CORE-G7 1000 -840 L10	4052899 537644	1000	≥ 80	4000	LES 10
PL-CORE-G7 1000 -927 L10	4052899 537668	1000	≥ 90	2700	LES 10
PL-CORE-G7 1000 -930 L10	4052899 537682	1000	≥ 90	3000	LES 10
PL-CORE-G7 1000 -935 L10	4052899 537705	1000	≥ 90	3500	LES 10
PL-CORE-G7 1000 -940 L10	4052899 537729	1000	≥ 90	4000	LES 10
PL-CORE-G7 2000 -827 L10	4052899 537743	2000	≥ 80	2700	LES 10
PL-CORE-G7 2000 -830 L10	4052899 537767	2000	≥ 80	3000	LES 10
PL-CORE-G7 2000 -835 L10	4052899 537781	2000	≥ 80	3500	LES 10
PL-CORE-G7 2000 -840 L10	4052899 537804	2000	≥ 80	4000	LES 10
PL-CORE-G7 2000 -927 L10	4052899 537828	2000	≥ 90	2700	LES 10
PL-CORE-G7 2000 -930 L10	4052899 537842	2000	≥ 90	3000	LES 10
PL-CORE-G7 2000 -935 L10	4052899 537866	2000	≥ 90	3500	LES 10
PL-CORE-G7 2000 -940 L10	4052899 537880	2000	≥ 90	4000	LES 10
PL-CORE-G7 2000 -827 L15	4052899 537903	2000	≥ 80	2700	LES 15
PL-CORE-G7 2000 -830 L15	4052899 537927	2000	≥ 80	3000	LES 15
PL-CORE-G7 2000 -835 L15	4052899 537941	2000	≥ 80	3500	LES 15
PL-CORE-G7 2000 -840 L15	4052899 537965	2000	≥ 80	4000	LES 15
PL-CORE-G7 2000 -927 L15	4052899 537989	2000	≥ 90	2700	LES 15
PL-CORE-G7 2000 -930 L15	4052899 538009	2000	≥ 90	3000	LES 15
PL-CORE-G7 2000 -935 L15	4052899 538023	2000	≥ 90	3500	LES 15
PL-CORE-G7 2000 -940 L15	4052899 538047	2000	≥ 90	4000	LES 15
PL-CORE-G7 3000 -827 L15	4052899 538061	3000	≥ 80	2700	LES 15
PL-CORE-G7 3000 -830 L15	4052899 538085	3000	≥ 80	3000	LES 15
PL-CORE-G7 3000 -835 L15	4052899 538108	3000	≥ 80	3500	LES 15
PL-CORE-G7 3000 -840 L15	4052899 538122	3000	≥ 80	4000	LES 15
PL-CORE-G7 3000 -927 L15	4052899 538146	3000	≥ 90	2700	LES 15
PL-CORE-G7 3000 -930 L15	4052899 538160	3000	≥ 90	3000	LES 15
PL-CORE-G7 3000 -935 L15	4052899 538184	3000	≥ 90	3500	LES 15
PL-CORE-G7 3000 -940 L15	4052899 538207	3000	≥ 90	4000	LES 15
PL-CORE-G7 5000 -827 L15	4052899 538221	5000	≥ 80	2700	LES 15
PL-CORE-G7 5000 -830 L15	4052899 538245	5000	≥ 80	3000	LES 15
PL-CORE-G7 5000 -835 L15	4052899 538269	5000	≥ 80	3500	LES 15
PL-CORE-G7 5000 -840 L15	4052899 538283	5000	≥ 80	4000	LES 15
PL-CORE-G7 5000 -927 L15	4052899 538306	5000	≥ 90	2700	LES 15
PL-CORE-G7 5000 -930 L15	4052899 538320	5000	≥ 90	3000	LES 15
PL-CORE-G7 5000 -935 L15	4052899 538344	5000	≥ 90	3500	LES 15
PL-CORE-G7 5000 -940 L15	4052899 538368	5000	≥ 90	4000	LES 15

1.3 Nomenclature



- PL:** PrevaLED® LED module
- CORE:** Round LED module
- G7:** Generation 7
- 3000:** 3000lm
- 830:** Color rendering index (CRI) + color temperature (CCT) = >80 + 3000K
- L15:** LES (= light-emitting surface), diameter: 15 mm

Holders

Product reference	Product number (EAN 10)
PL-CORE HOLDER H1 FOR LES10	4062172315241
PL-CORE HOLDER H1 FOR LES15	4062172315265
PL-CORE HOLDER H3	4052899580688



PL-CORE HOLDER H1 FOR LES10



PL-CORE HOLDER H1 FOR LES15

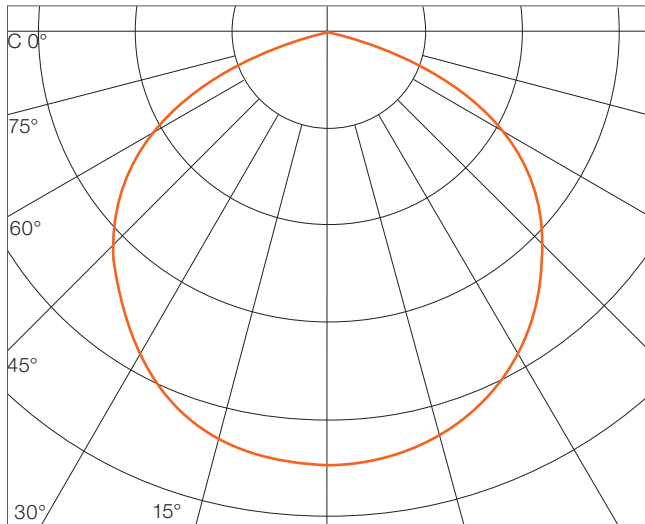


PL-CORE HOLDER H3

2 Optical considerations

2.1 Light distribution

The light distribution of the LED module is shown in the graph below. PrevaLED® Core G7 LED modules create a beam angle of 114° FWHM (full width at half maximum).



2.2 Reflector design

High luminances are the key factor for LED-based lamps and luminaires in the area of reflector applications, such as spotlights. For this purpose, light sources with small light-emitting surfaces and a high luminous flux – as realized in the PrevaLED® Core G7 – are required, because in such combinations, the light can be collimated particularly well with reflectors.

The PrevaLED® Core G7 is equipped with a surface that emits light evenly and makes the use of diffuser materials unnecessary due to its high level of homogeneity. The minimized light-emitting surface (with either LES 15 or LES 10) and a positioning of the reflector close to the LES due to the new flat holder allow improved optical handling. Generally, the properties of the PrevaLED® Core G7 help to avoid roughness and facets, allowing for very small total beam angles of 10° or less.

We provide mechanical (3D files) and optical simulation data (ray files as well as EULUMDAT files) to support customized reflector designs. Mechanical files can be downloaded via the OEM Download Center on our webpage: www.inventronics-light.com/ds/oem_download_center.jsp

Support for optics can be found, for example, at the suppliers listed below. Or refer to our reflector compatibility overview as well as 3D files which can be found at the OEM Download Center on our webpage: www.inventronics-light.com/ds/oem_download_center.jsp

Moreover, off-the-shelf solutions and support for reflector design are available, e.g., from the following suppliers:

ACL-Lichttechnik GmbH

Hans-Boeckler-Strasse 38A
40764 Langenfeld, Germany
+49 2173 9753 0
info@reflektor.com
www.reflektor.com

Almeco S.p.A.

Via della Liberazione, 15
20098 San Giuliano Milanese (Mi), Italy
+39 02 988963 1
info.it@almecogroup.com
www.almecogroup.com

Ledil Oy

Salorankatu 10,
24240 Salo, Finland
+358 2 7333804
ledil@ledil.com
www.ledil.com

Jordan Luxar GmbH & Co. KG

Schneiderstrasse 76
40764 Langenfeld, Germany
+49 2173 279 0
sales@jordan-luxar.de
www.jordan-luxar.de

Jordan Reflektoren GmbH & Co. KG

Schwelmer Strasse 161
42389 Wuppertal, Germany
+49 202 60720
info@jordan-reflektoren.de
www.jordan-reflektoren.de

Nata Lighting Co., Ltd.

380 Jin Ou Road, Jiang Hai District
Jiang Men City, Guangdong, China
+86 750 377 0000
info@nata.cn
www.nata.cn

2.3 Photobiological safety

According to IEC/EN 62471, all PrevaLED® Core G7 LED modules are within risk group (RG) 1 at their nominal operating conditions.

Notes:

For the PL-CORE-G7-5000-840 module, the photobiological safety class RG 1 might not be achieved when using a significantly higher current than the nominal module current. This may result in risk group classifications up to RG 2.

To avoid any adverse effects on sensitive materials, it is recommended to consider the distance between the LED light source and the illuminated object, depending on the light intensity of the LED source. If in doubt, material compatibility checks should be conducted.

The PrevaLED® Core G7 can be used with secondary optics.

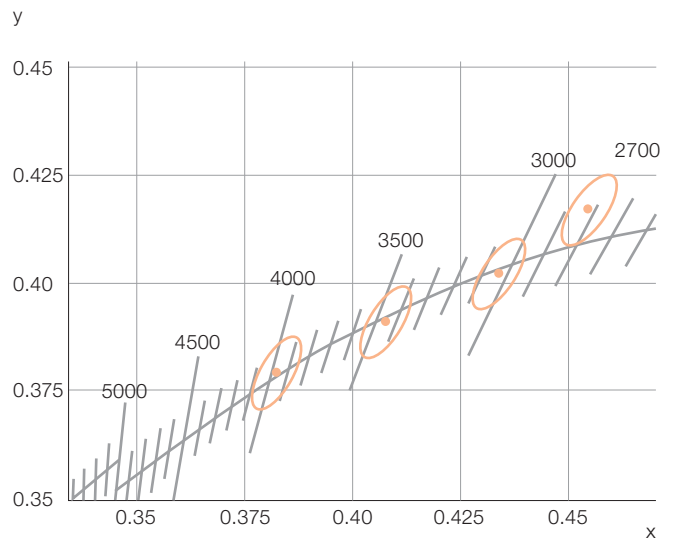
2.4 Color temperature

The PrevaLED® Core G7 series is currently available in 2700K, 3000K, 3500K and 4000K. The average values of color coordinates within the CIE 1931 color space are given below (average guiding values for reference only).

	2700 K	3000 K	3500 K	4000 K
Cx	0.4578	0.4332	0.4069	0.3804
Cy	0.4207	0.4019	0.3916	0.3781

Values measured at $t_p = 65^\circ\text{C}$

Within each available color temperature, the PrevaLED® Core G7 series provides a maximum color variation of three threshold value units (MacAdam steps). The following diagram shows these threshold values within the CIE 1931 color space.



Chromaticity coordinate groups:

Chromaticity coordinates are measured during a current pulse of typically 25 ms, with an internal reproducibility of ± 0.005 and an expanded uncertainty of ± 0.01 (according to GUM with a coverage factor of $k = 3$). For testing, the chromaticity coordinate ellipses are approximated with polygons.

2.5 Color rendering

PrevaLED® Core G7 LED modules provide a color rendering index (CRI) of either >80 or >90. The table below shows the individual R_a values from R1 to R14 for the available color temperatures.

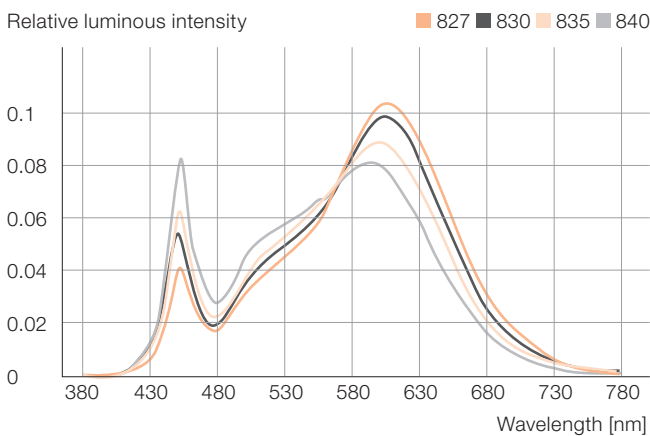
R_a values (average guiding values for reference only)

	General CRI	Dusky pink	Mustard yellow	Yellowish green	Light green	Turquoise	Azure	Aster violet	Lilac violet	Red, saturated	Yellow, saturated	Green, saturated	Blue, saturated	Pink, skin color	Leaf green	FCI	TM30	TM30	
	R _a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14		R _f	R _g	
CRI 80																			
CCT = 2700 K	83	82	93	94	81	83	93	82	58	11	85	81	79	85	98	107	84	95	
CCT = 3000 K	84	82	93	95	82	83	91	83	60	9	83	82	76	85	98	105	84	96	
CCT = 3500 K	84	82	92	96	82	83	90	84	62	10	81	81	70	85	98	103	84	94	
CCT = 4000 K	85	83	91	96	83	83	88	86	65	12	80	83	67	85	98	100	84	95	
CRI 90																			
CCT = 2700 K	91	91	94	96	90	90	93	91	83	67	90	91	85	91	96	116	90	98	
CCT = 3000 K	91	91	95	98	90	90	94	91	79	52	88	91	79	92	99	115	89	99	
CCT = 3500 K	92	92	96	97	91	91	93	92	83	59	89	91	76	93	98	113	89	98	
CCT = 4000 K	91	91	94	96	90	90	91	93	83	57	86	90	69	92	98	109	88	97	

2.6 Spectral distribution

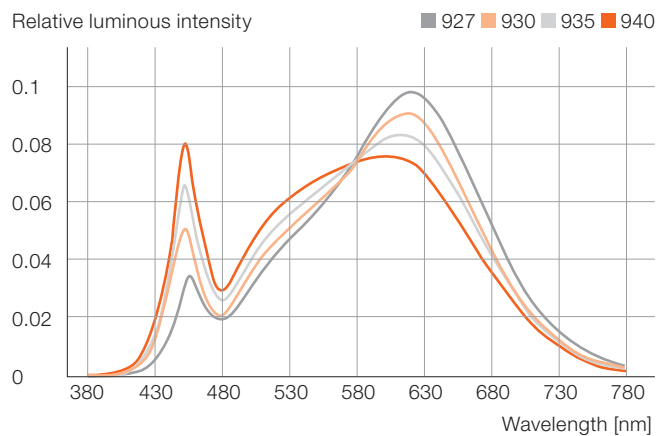
The typical spectral distribution of the PrevaLED® Core G7 LED modules is shown in the following diagrams.

CRI 80 (average guiding values for reference only)



Values measured at t_p = 65 °C

CRI 90 (average guiding values for reference only)



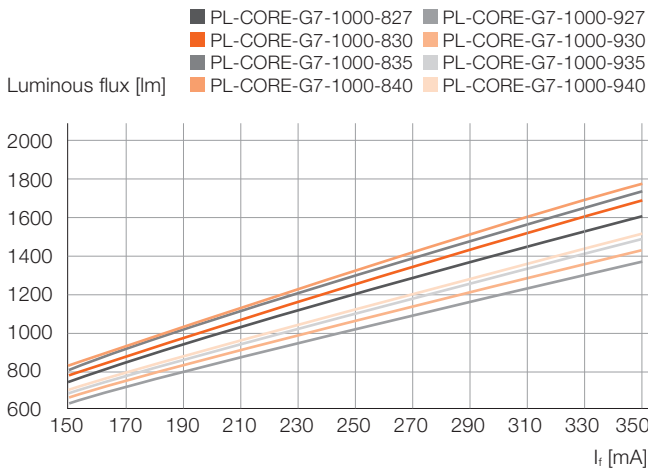
Values measured at t_p = 65 °C

2.7 Luminous flux behavior

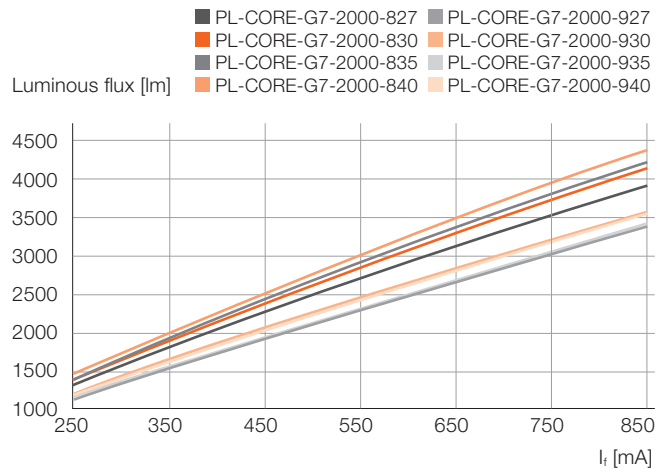
The following diagrams show the luminous flux as a function of the operating current for PrevaLED® Core G7 LED modules with 2000, 3000 and 5000 lm. Data related to the operating current is derived from a t_p temperature of 65 °C.

Luminous flux as a function of forward current (I_f)

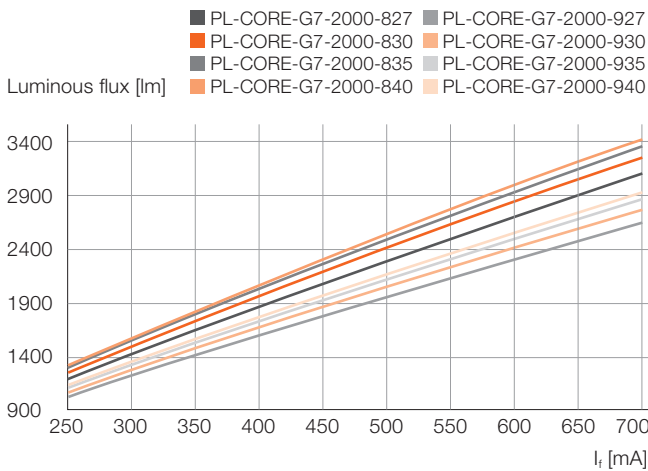
PL-CORE-G7-1000-XXX L10



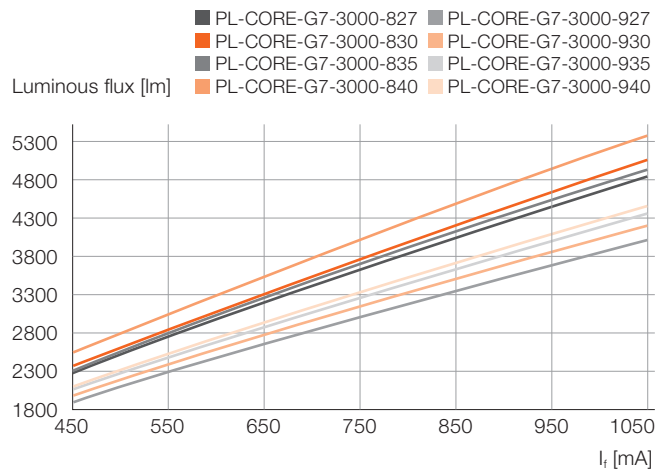
PL-CORE-G7-2000-XXX L15



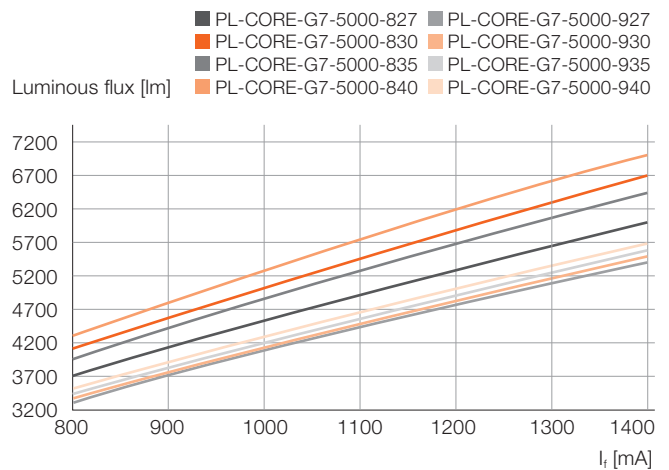
PL-CORE-G7-2000-XXX L10



PL-CORE-G7-3000-XXX L15



PL-CORE-G7-5000-XXX L15



Note:

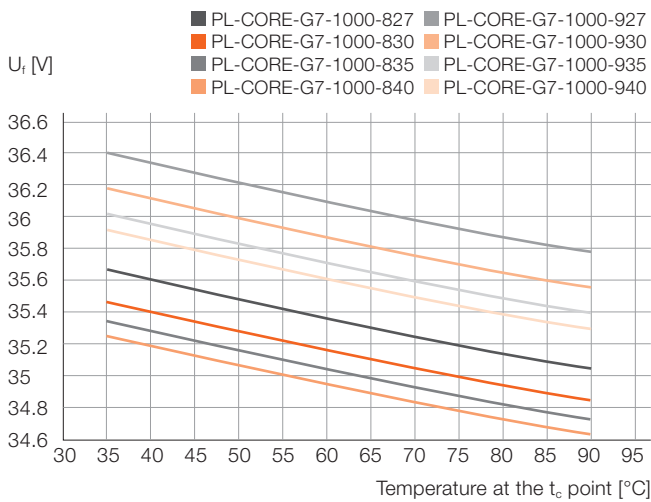
Tolerance for optical and electrical data: +/-10%

3 Electrical considerations

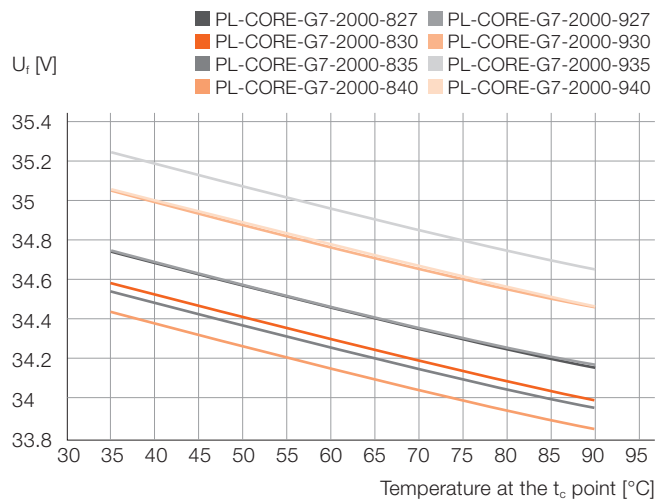
3.1 Forward voltage as a function of temperature

Forward voltage (U_f) as a function of temperature at the t_c point

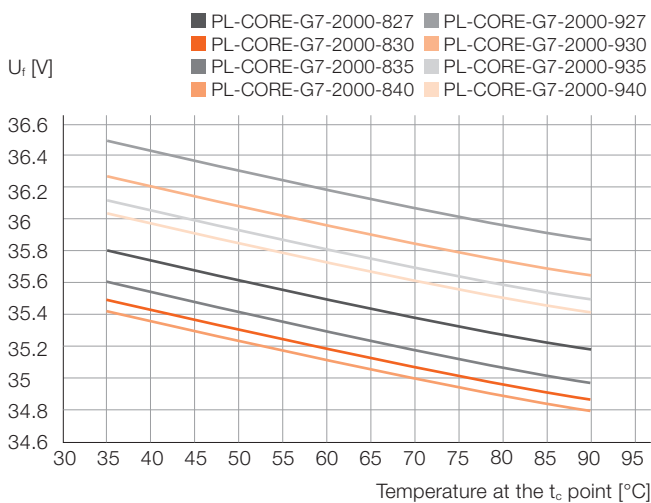
PL-CORE-G7-1000-XXX L10



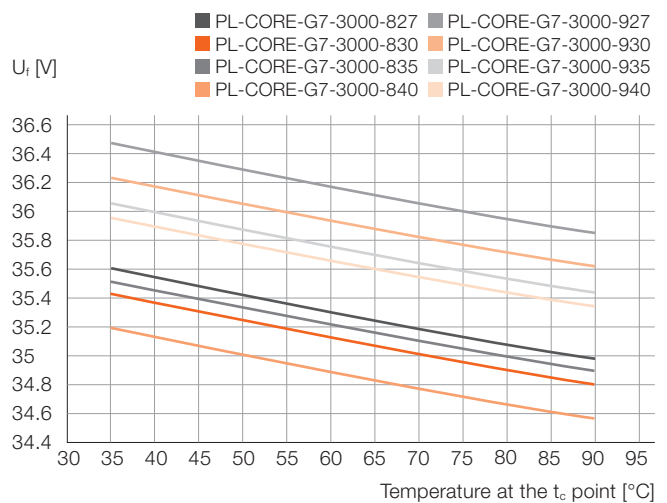
PL-CORE-G7-2000-XXX L15



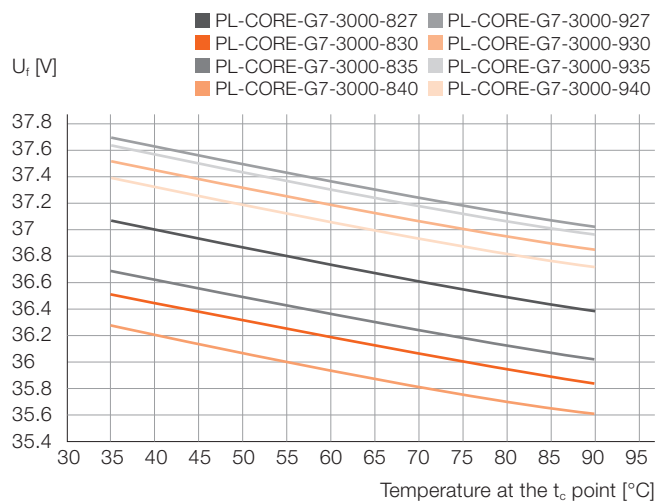
PL-CORE-G7-2000-XXX L10



PL-CORE-G7-3000-XXX L15



PL-CORE-G7-5000-XXX L15



Note:
Tolerance for optical and electrical data: +/-10%

3.2 LED driver/LED module combination

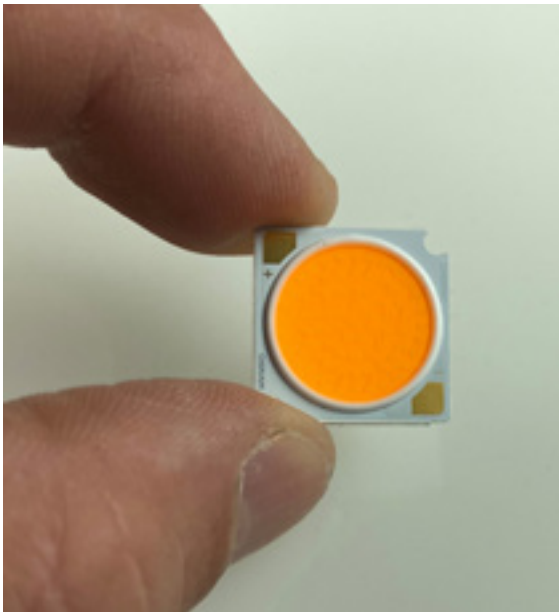
PrevaLED® Core G7 LED modules can either be used with non-dimmable or intelligent, dimmable LED drivers (e.g. OTi DALI).

Driver selector and digital OT poster

Please refer to the link below for a quick OSRAM LED driver/LED module combination check:

<https://www.inventronics-light.com/de/driver-selector-digital-ot-poster>

Assembly instructions



1 Take the LED chip out of the packaging. The plus and minus poles are clearly marked on the top side of the LED COB.



2 Turn the LED COB over and insert it into the back of the holder. Make sure that the polarity is correct.



3 Now carefully press on the back of the LED COB until it clicks into place in the holder (at the notch on the side, as shown above).



4 The connection between the LED COB and the holder is now established. The LED module is ready for installation.

Electrostatic discharge (ESD)

PrevaLED® light engines can cause damage, ranging from performance degradation to complete device failure. Inventronics recommends that all PrevaLED® light engines are handled and stored using appropriate ESD protection methods. Please note: Handle with care!

ELECTROSTATIC DISCHARGE SENSITIVITY

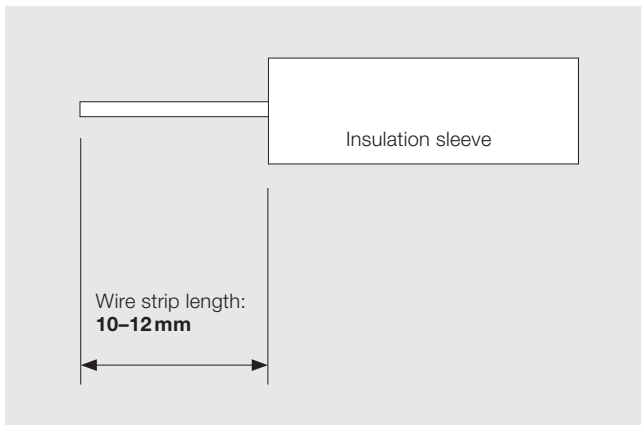


3.3 Wiring

PrevaLED® Core G7 LED modules are equipped with an easy “poke-in” connector. The input clamps used in PrevaLED® Core G7 LES 10 and LES 15 types can handle solid and stranded wires with a cross section of 0.5–0.8 mm² (AWG 20–18).

Example: H05V-U 1x 0.5 mm²

Wire preparation



Please note:

- The connector is designed for two “poke-in” and release cycles.
- The installation of LED modules has to be carried out in compliance with all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
- If you cannot use solid wires, you can use stranded wires with a diameter of 0.5 to 0.75 mm and tin-coat the wire ends before inserting them into the connection clamp. Depending on the wire and/or cable type, other suitable preparations may also be necessary (e.g. cable end contacts).

3.4 Maximum allowed number of LED drivers per circuit breaker

For the maximum allowed number of LED drivers per circuit breaker, please refer to the corresponding LED driver data-sheet.

3.5 ESD

It is not necessary to handle PrevaLED® Core G7 LES 15 LED modules in electrostatic protected areas (EPAs). To protect a PrevaLED® Core G7 LED module from electrostatic damage, do not open it. The LED module fulfills the requirement of the immunity standard IEC/EN 61547.

Note:

Please be aware that it is mandatory to handle LES 10 components in electrostatic protected areas (EPAs).

Easy “poke-in”:



4 Thermal considerations

The proper thermal design of an LED luminaire is critical for achieving the best performance and ensuring the longest lifetime of all components. Due to the high efficacy of PrevaLED® Core G7 LED modules, only a partial amount of the introduced electrical power has to be dissipated through the back of the LED module. The thermal power that has to be dissipated for PrevaLED® Core G7 LED modules is shown in the following table.

Note:

To achieve the best possible lifetime of the LED module and to protect it from damage by overheating, the module must not exceed a maximum t_c of 100 °C.

Moreover, it is mandatory to use TIM (thermal interface materials, e.g. thermal paste) to ensure a proper thermal conductance between the LED module and the heat sink.

4.1 Thermal power values

Product	Typ. thermal power at nominal current	Typ. thermal resistance at nominal current	Max. thermal power	Max. thermal resistance
	$P_{th\ typ}$ [W]	$R_{th\ typ}$ [K/W]	$P_{th\ max}$ [W]	$R_{th\ max}$ [K/W]
PL-CORE-G7 1000-827 L10	4.0	9.9	39.1	1.9
PL-CORE-G7 1000-830 L10	3.6	11.1	34.6	2.2
PL-CORE-G7 1000-835 L10	3.4	11.9	36.0	2.1
PL-CORE-G7 1000-840 L10	3.2	12.5	32.6	2.3
PL-CORE-G7 1000-927 L10	5.6	7.1	44.3	1.7
PL-CORE-G7 1000-930 L10	5.1	7.8	43.9	1.7
PL-CORE-G7 1000-935 L10	4.8	8.4	42.9	1.7
PL-CORE-G7 1000-940 L10	4.6	8.7	41.8	1.8
PL-CORE-G7 2000-827 L10	8.8	4.5	36.2	2.1
PL-CORE-G7 2000-830 L10	7.9	5.0	31.7	2.4
PL-CORE-G7 2000-835 L10	7.4	5.4	33.1	2.3
PL-CORE-G7 2000-840 L10	7.1	5.6	29.7	2.5
PL-CORE-G7 2000-927 L10	12.0	3.3	41.4	1.8
PL-CORE-G7 2000-930 L10	11.0	3.6	41.0	1.8
PL-CORE-G7 2000-935 L10	10.3	3.9	40.0	1.9
PL-CORE-G7 2000-940 L10	9.9	4.1	38.9	1.9
PL-CORE-G7 2000-827 L15	7.1	5.7	36.2	2.1
PL-CORE-G7 2000-830 L15	6.2	6.4	31.7	2.4
PL-CORE-G7 2000-835 L15	6.0	6.7	33.1	2.3
PL-CORE-G7 2000-840 L15	5.4	7.3	29.7	2.5
PL-CORE-G7 2000-927 L15	9.8	4.1	41.4	1.8
PL-CORE-G7 2000-930 L15	8.7	4.6	41.0	1.8
PL-CORE-G7 2000-935 L15	9.8	4.1	40.0	1.9
PL-CORE-G7 2000-940 L15	8.8	4.6	38.9	1.9
PL-CORE-G7 3000-827 L15	11.7	3.4	33.3	2.3
PL-CORE-G7 3000-830 L15	10.7	3.8	28.8	2.6
PL-CORE-G7 3000-835 L15	11.2	3.6	30.2	2.5
PL-CORE-G7 3000-840 L15	9.2	4.3	26.8	2.8
PL-CORE-G7 3000-927 L15	17.4	2.3	38.5	1.9
PL-CORE-G7 3000-930 L15	15.8	2.5	38.1	2.0
PL-CORE-G7 3000-935 L15	14.7	2.7	37.1	2.0
PL-CORE-G7 3000-940 L15	14.0	2.9	36.0	2.1
PL-CORE-G7 5000-827 L15	24.9	1.6	27.5	2.7
PL-CORE-G7 5000-830 L15	19.9	2.0	22.9	3.3
PL-CORE-G7 5000-835 L15	21.5	1.9	24.4	3.1
PL-CORE-G7 5000-840 L15	17.8	2.2	21.0	3.6
PL-CORE-G7 5000-927 L15	30.9	1.3	32.7	2.3
PL-CORE-G7 5000-930 L15	30.3	1.3	32.2	2.3
PL-CORE-G7 5000-935 L15	29.2	1.4	31.3	2.4
PL-CORE-G7 5000-940 L15	28.0	1.4	30.2	2.5

Note:

Values calculated at reference t_c point temperature of 65 °C

4.2 TIM and other accessories

When mounting a PrevaLED® Core G7 LED module within a luminaire, it is mandatory to use thermal interface material (TIM) between the back of the LED module and the luminaire housing or heat sink. It is recommended to use thermal paste or phase-change material (PCM) because they perform better than thermal foil or pads. In order to balance possible unevenness, the material should be applied with a thickness between 0.15 and 0.30 mm (0.25 mm is recommended) and a maximum size of 25 x 25 mm. In this way, air inclusions, which may otherwise occur, are replaced by TIM and the required heat conduction between the back of the LED module and the contact surfaces of the luminaire housing is achieved. For this purpose, the roughness of the surface should be minimized and the planarity as well as the cleanness of the surface (free from burrs, chips or any other particles) should be optimized.

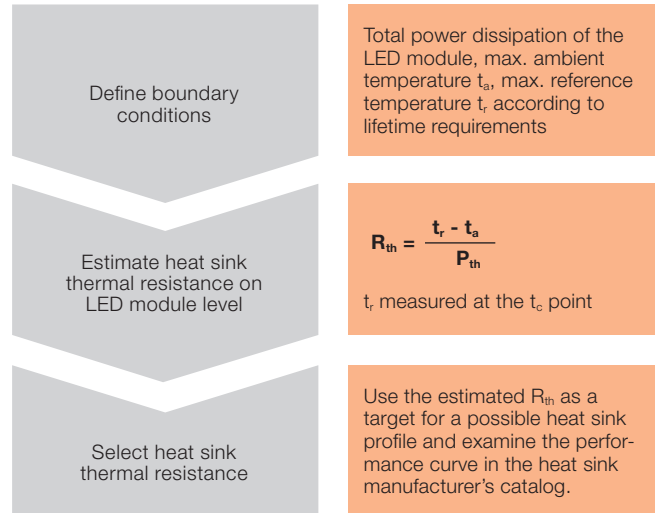
The list below is a selection of suppliers of thermal interface materials.

Thermal interface materials

Alfatec	www.alfatec.de
Kerafol	www.kerafol.de
Laird	www.lairdtech.com
Bergquist	www.bergquistcompany.com
Arctic Silver	www.arcticsilver.com
Wakefield	www.wakefield.com

4.3 Cooling system and heat sink

For the selection of a suitable heat sink, several points regarding thermal resistance have to be considered. The selection is usually carried out through the following necessary steps.



Please note:

A thermal design must always be confirmed by performing a thermal measurement in steady-state condition. The whole area of the metal-core PCB must be in full contact with the heat sink.

The list below is a selection of suppliers of different cooling solutions.

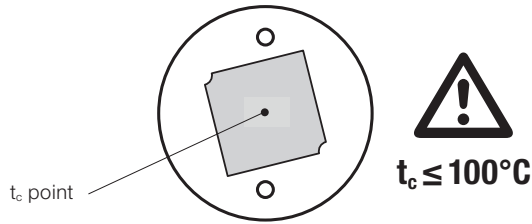
Cooling systems

Nuventix	www.nuventix.com
Sunon	www.sunoneurope.com
Cooliance	www.cooliance.eu
AVC	www.avc-europa.de
SEPA	www.sepa-europe.com
Fischer Elektronik	www.fischerelektronik.de
Wakefield	www.wakefield.com
MechaTronix	www.mechatronix-asia.com

4.4 t_c point location and temperature measurement

The t_c point is the location where to check if the chosen cooling solution (heat sink and TIM) is sufficient to ensure the LED module performance. The t_c point is located on the back of the LED module under the center of the light-emitting surface (see following image).

Location of the t_c point



To enable a lifetime of 60 000 hours (L80B10), the reference temperature (t_r) at the t_c point must not exceed 80 °C. The maximum temperature reached at the t_c point must not exceed 100 °C. A correct temperature measurement can, for example, be performed with a thermocouple.

4.5 Thermocouple

Use a thermocouple that can be glued onto the LED module. Make sure that the thermocouple is fixed with direct contact to the t_c point. Examples of suitable thermocouples:



Different thermocouples

Illustration	Description	Temperature range [°C]
	PVC-insulated thermocouple	-10 ... +105
	PFA-insulated thermocouple	-75 ... +260
	Sprung thermocouple	-75 ... +260

To measure the temperature and to ensure a good thermal coupling between the LED module and the heat sink, you should drill a hole into the heat sink and push the thermocouple through it. To ensure a direct contact between the thermocouple and the PCB, it is recommended to glue the thermocouple onto the PCB. You can, for example, use an acrylic adhesive (e.g. type Loctite 3751).

It is also possible to use a sprung thermocouple. A suitable type is: Electronic Sensor FS TE-4-KK06/09/2m. Please note that a good thermal contact between the thermocouple and the PCB is required. Please refer to the data-sheet and the application guideline of the manufacturer to ensure correct handling.

Another possible way is to create a small groove along the top surface of the heat sink and run the thermocouple to the t_c point inside the groove.

Notes:

Please keep in mind that you need a direct contact between the thermocouple and the PCB. It is mandatory to use TIM (e.g. thermal paste) for a proper thermal coupling!

If you use TIM, you should cut out a small area where the thermocouple has direct contact to the metal-core PCB.

t_p : 65 °C enables all performance data (steady state)

t_p : 80 °C enables lifetime of 60 000 hours (L80B10)

5 Lifetime and thermal behavior

5.1 Luminous flux as a function of temperature

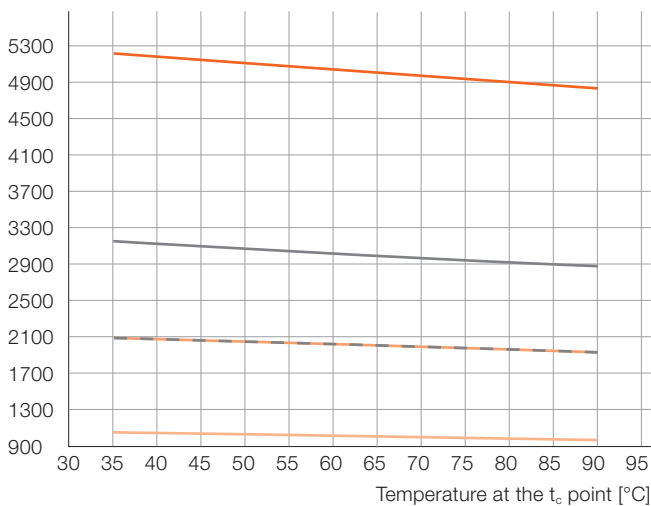
The luminous flux of a PrevaLED® Core G7 LED module depends on its temperature. 100 % of the luminous flux is usually achieved at the performance temperature of 65 °C. The following exemplary diagram shows the behavior of the luminous flux output as a function of the temperature at the t_c point for PrevaLED® Core G7.

The following exemplary diagram shows the behavior of the luminous flux output as a function of the temperature at the t_c point for PrevaLED® Core G7.

Luminous flux as a function of temperature (average guiding values for reference only)

Luminous flux [lm]

- PL-CORE-G7-5000-XXX L15
- PL-CORE-G7-3000-XXX L15
- PL-CORE-G7-2000-XXX L15
- PL-CORE-G7-1000-XXX L10
- PL-CORE-G7-2000-XXX L10



5.2 Lifetime

OSRAM PrevaLED® Core G7 LED modules have a lifetime of 60 000 hours (L80B10) at a performance temperature (t_p) of 65 °C. This means that after 60 000 hours, a minimum of 10 % of the utilized LED modules will have at least 80 % of the initial luminous flux. If you operate the module at a lower temperature, the lifetime of the module is going to rise significantly. For more details, please refer to the product datasheet.

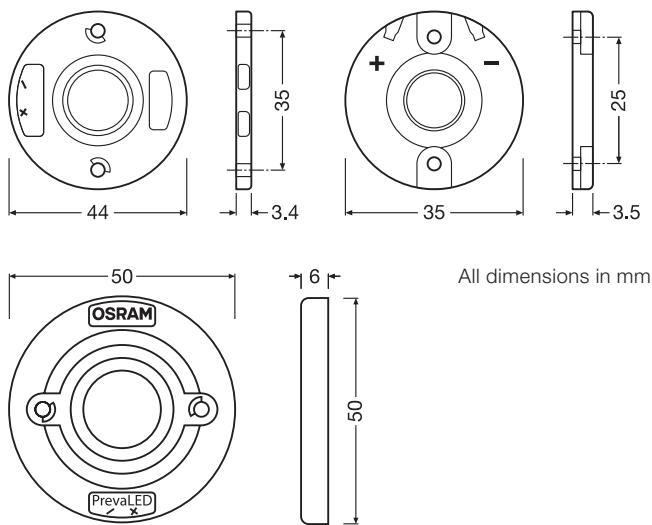
Note: Higher t_c temperatures lead to a shorter lifetime of the PrevaLED® Core G7 LED module. Moreover, the failure rate will also increase.

To enable a lifetime of 60 000 hours (L80B10), the reference temperature (t_r) at the t_c point must not exceed 80 °C.

6 Mechanical considerations

The following schematic drawing provides further details on the dimensions of PrevaLED® Core G7 LED modules. For 3D files of the LED modules, please go to www.inventronics-light.com

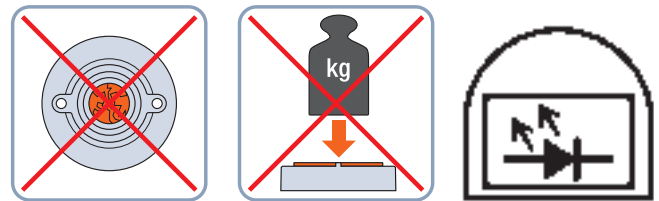
6.1 Outline drawing H1 (LES 15, LES 10) and H3



6.2 Mechanical protection of the PrevaLED® Core G7 LED module

The housing of a PrevaLED® Core G7 LED module should not be exposed to strong mechanical stress. Please apply force only to the dedicated mounting positions. Strong mechanical stress can lead to irreversible damage of the LED module.

Note: Please do not touch or mechanically stress the yellow chip-on-board (CoB) surface. This could damage the module.



For operation in damp, wet or dusty environments, the user has to make sure that an adequate ingress protection (IP) is chosen. The LED module has to be protected by a suitable IP rating of the luminaire housing. Please observe the luminaire standard IEC 60598-1 as well as the different requirements.

6.3 Mounting

To fix a PrevaLED® Core G7 LED module onto a heat sink, you can use either M3 screws with pan head or counter-sunk M3 screws (with minimum depth). Flat head and oval head screws, which have no horizontal contact zone toward the LED holder, must not be used. The allowed torque using pre-tapped holes is 0.4 to 0.6 Nm.

7 Norms and standards

Safety:	IEC/EN 62031
Photobiological safety:	IEC/EN 62471
Risk group:	RG1
Ingress protection:	–
Approvals:	CE



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Modules perfectly matched to OSRAM OPTOTRONIC® LED drivers. For current photometric data and important safety, installation and application information, see www.inventronics-light.com. All the technical parameters apply to the entire module. In view of the complex manufacturing process for light-emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

Use our contact form

www.inventronics-light.com/contact-us



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