LIGHTINGEUROPE
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Specific rules for life cycle assessment of control gears for light sources

Contents

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1. Introduction

This technical memorandum has been prepared by LightingEurope. It contains rules, requirements, and guidelines for conducting a life cycle assessment (LCA) of control gears for light sources that complement the core Product Category Rules (PCRs) and provide specific details for this product category.

LightingEurope previously identified the complexities and harmonization challenges relating to the LCA rules for luminaires and was able to contribute to the revision of a set of Product Specific Rules (PSRs) with one Program Operator which already contained some mature rules for luminaires (namely, PEP Ecopassport PSR0014). This work brought lighting industry specific knowledge to the Program Operator and resulted in the successful publication of revised rules. This publication is now being promoted for standardization through Global Lighting Alliance, IEC standardization initiatives and Program Operator mutual recognition agreements.

In its contributions to the luminaire PSR0014, LightingEurope identified an additional need for rules, requirements, and guidelines to conduct a LCA for core luminaire components, namely the light source and the control gear for the light source. This technical memorandum (partly) answers this need and provides these rules, requirements, and guidelines for control gears for light sources. Specifically, it defines Functional and Declared Units, Reference Service Life, Reference Flow Elements and default scenarios.

Any organization intending to support the creation of Environmental Product Declarations (EPDs) for control gears for light sources, e.g. through an EPD program or via standards, can integrate these definitions and scenarios into its documents, possibly with reference to an existing core PCR. The definitions and scenarios defined in this technical memorandum can thus be used to complement the core PCRs available from Program Operators (such as IBU Part A, or PEP PCR ed. 4.0) or from SDOs (such as IEC 63366, EN 50693, or EN 15804).

LightingEurope has prepared this technical memorandum with the expressed intention of aligning the rules for control gears for light sources with those for the luminaire as provided in PEP PSR0014. Further it has included lighting specific consideration and terminology such that those using this document can benefit from industry specific guidance and terminology when creating EPD programs or supporting standards for control gears for light sources.

This document is available to any and all LCA Program Operators and Standards Development Organizations (SDOs). By making this technical memorandum freely available to all interested parties without limitations, LightingEurope seeks to overcome harmonization challenges relating to the LCA rules for control gears for light sources.

LightingEurope welcomes feedback and questions from any such organizations and may be contacted through contact@lightingeurope.org for dialogue. LightingEurope intends to produce a separate technical memorandum to provide specific rules, requirements and guidelines for light sources in the future.

2. Scope

This technical memorandum details rules, requirements, and guidelines to conduct LCAs for control gears for light sources. It defines Functional and Declared Units, Reference Service Life, Reference Flow Elements and default scenarios to aid the creation of EPD programs for control gears for light sources.

It is the assumption that the rules, requirements, and guidelines in this technical memorandum are used to complement the more general rules in a core PCR available from Program Operators (such as IBU Part A, or PEP PCR ed. 4.0) or from SDOs (such as IEC 63366, EN 50693, or EN 15804). Whenever this technical memorandum does not specify rules, requirements and guidelines, the rules, requirements, and guidelines from the core PCR apply. Specific rules, requirements and guidelines may be added by Program Operators or standardization bodies developing a PSR supplementing a specific core PCR. Scenarios provided in this technical memorandum may be modified according to the rules of the core PCR and such modifications must be justified in the LCA report and described in the EPD.

This reference document is primarily intended for:

- Program Operators that intend to develop EPD programs for control gears for light sources,
- SDOs that intend to support EPD programs for control gears for light sources through standards,
- Environment and/or product managers,
- LCA experts in companies, in charge of EPD development.

2.1. Description of the covered product families

A control gear for a light source according to this document is a unit inserted between the power supply and at least one light source, which serves to supply the light source(s) with its (their) rated voltage or rated current, and which can consist of one or more separate components.

For the purpose of delimitation, control gears that are totally integrated in a light source are not within the scope of this technical memorandum (e.g. E27 LED lamps).
A detailed definition of “control gear” is provided in paragraph 5.2.

The control gears in scope of this technical memorandum must conform to the relevant normative and regulatory standards established at the International, European, and national levels according to their applications. A non-exhaustive list, defining the main normative and regulatory elements to be respected, is provided in paragraph 5.4 Bibliography.

3. Product life cycle assessment

3.1. Functional unit and reference flow description

These specific rules are in addition to the core PCR rules.

3.1.1. Functional unit (FU)

The FU is defined below:

“Provide 10W of power to a light source during a reference lifetime of 35,000 hours”

The LCA enables to compare different types of control gears according to usage unit (10W of outgoing power) and a reference lifetime (fixed reference lifetime which cannot be assimilated to the actual life of the lighting or its actual running time) common to all control gears, fixed to 35,000 hours.

Assuming a 100 lm/W luminous efficacy and aligning with the PSR for luminaires (PSR0014) where the FU is based on an artificial luminous flux of 1000 lm, it was decided to define a power of 10 W provided to the light source. Note that this technical memorandum is also applicable to control gears having other wattages.

It should be noted, however, that the concept of comparability between several products will have to take into account the fundamental technical data of each of them. For reasons of comparability, some basic and representative technical characteristics of the reference product shall be specified in the EPD according to the paragraph 4.1.

3.1.2. Declared unit (DU)

The declared unit approach is not appropriate to allow comparability for control gears, since calculations are always related to a given function provided by one given control gear.
However, when a declared unit approach is applied the declared unit is given by:

"A control gear providing its maximum power of XXX W to a light source during its assigned lifetime of YY years"

where XXX is the maximum power of the control gear according to paragraph 3.1.3.1 and YY is the assigned lifetime expressed in operational years of the control gear according to paragraph 3.1.3.2. The assigned lifetime in operational years shall be provided with a precision of one decimal digit.

The gained results may be declared for the assigned lifetime of the selected control gear.

3.1.3. Reference product and reference flow description

The reference flow (energy and material flows corresponding to the FU) shall be determined in application of paragraph 3.1.1 “Functional Unit” of this present document and in accordance with the requirements set out in the core PCR.

A "control gear" as defined in the paragraph 2.1. “Scope” has the following elements:

- a PCB
- electrical components,
- optionally, cables and/or connectors for wiring
- optionally, a housing
- if applicable, components associated with light management functions, or components associated with compatibility with lighting control systems, integrated into, or supplied with, the control gear

The EPD shall include full transparency on the description of the control gear covered by the EPD including the dimming function considered.
The control gear is characterized for an outgoing power with an assigned lifetime set in the paragraphs 3.1.3.1 and 3.1.3.2, respectively.

The reference flow corresponding to the FU shall take into account the value of the power as well as the assigned lifetime of the control gear determined in accordance with the requirements established respectively in the paragraphs 3.1.3.1 and 3.1.3.2.

3.1.3.1. Determination of the power provided to the light source by the control gear

•P_{out}: Maximum power that a control gear can deliver to the light source in Watts
•P_{in}: Input power required **by the control gear** to deliver maximum power to the light source in Watts

Pin and Pout are related by the control gear efficiency η_{cg}

$$\eta_{cg} = P_{out}/P_{in}$$

For calculations according to this technical memorandum, the input power must be used. Input power should be established at the maximum rated output power using the efficiency at this maximum output power.
The maximum rated output power for constant voltage control gears (Figure 1a), constant current control gears (Figure 1b) and programmable window control gears without power cut (Figure 1c) is a single point and the efficiency corresponding to this point shall be selected. In the case of a programmable control gear with power cut (Figure 1d), the

maximum rated output power is a curve, and the corresponding efficiency at any point on this curve can be chosen.

The maximum rated output power of the control gear must be consistent with the information declared by the manufacturer within the technical datasheet.

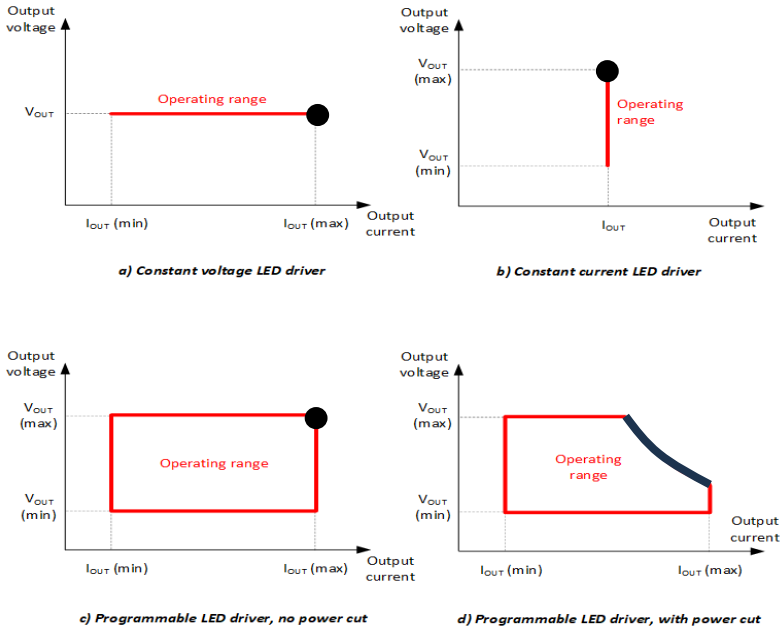

Figure 1 Maximum rated output power for different types of control gears

3.1.3.2. Declaration of the assigned lifetime of a control gear

The assigned lifetime of the control gear is the life expectancy as declared by the manufacturers according to the operating conditions of use provided by them, depending on maximum power provided to the light source, according to paragraph 3.1.3.1, and operating temperature.

It shall be declared in xx.xxx hours of operation and failure rate x.x% at xx.xxx hours. The reference conditions shall be specified in the technical data sheet. The conversion of hours of operation into years of operation shall be calculated considering 8760 hours per year. The assigned lifetime must be justified in the LCA report.

The assigned lifetime of the control gear must be consistent with the information declared by the manufacturer within the technical datasheet.

3.2. System Boundaries

These specific rules are additional to the requirements set out in the core PCR.

The breakdown of the lifecycle stages is done according EN 15804. The following life cycle stages shall be included:

- The manufacturing stage (A1 to A3). The manufacturing stage shall include any accessory shipped with the control gear.
- The distribution stage (A4)
- The installation stage (A5) Disposal of the packaging material of the control gear for light sources.
  The installation stage does not include:
  - any fixing component not shipped with the control gear.
  - fixing processes that are implemented during the installation.
- The use stage (B1 to B7),

The environmental impacts of the use stage must be broken down as detailed below:
B1: Use or application of the product installed: Not Applicable.
B2: Maintenance: Not Applicable.
B3: Repair: Not Applicable.
B4: Replacement: Not Applicable.
B5: Restoration: Not Applicable.
B6: Energy requirements during the use stage
The use stage of the control gear considers the maximum input power as established according to 3.1.3.1
B7: Water requirements during the use stage: Not Applicable.

- The end-of-life stage (C1 to C4).

Optionally: Benefits and impacts outside the system boundaries (D)

3.3. Development of scenarios (default scenarios)

These specific rules are additional to the requirements set out in the core PCR.

Any other scenario than the default scenario described below must be justified in the LCA report and mentioned in the EPD.

3.3.1. Manufacturing Stage (A1 to A3)

The manufacturing stage shall be analyzed in accordance with paragraph 3.2 "System boundaries" of this technical memorandum and the default scenarios of the core PCR.

Recycled content
The recycled content should be declared in the EPD. It shall be assessed according to EN 45557.
Recycled content should be justified in the LCA report by a signed declaration from the supplier or a material datasheet stating the recycled content.

Packaging of raw materials and components
Packaging of raw materials and components, including their transport to manufacturing sites, shall be considered. Suppliers' data with justification shall be used. If no justification is available, an average quantity of 5% in mass of the control gear shall be considered, and split as follows:

- Wood: 50%
- Cardboard: 40%
- Low density polyethylene: 10%

Packaging that is reused on site is not considered.

Manufacturing waste
The LCA report shall identify the waste treatments of output flows from the control gear manufacturing site as well as the corresponding datasets used.

3.3.2. Distribution stage (A4)

The distribution stage shall be analyzed in accordance with default scenarios and requirements of the core PCR.

3.3.3. Installation stage (A5)

The installation stage shall be analyzed in accordance with the paragraph 3.2 “System boundaries” of this technical memorandum and default scenarios and requirements of the core PCR.

No specific additional installation equipment or procedure is needed.

End of life of packaging shall be taken into account.

3.3.4. Use stage (B1 to B7)

The following table provides a synthetic view of how the environmental impacts shall break down for the following modules B1 to B7.

B1 Use or application of the installed product	The specific rules of the present technical memorandum do not define elements to declare in B1
B2 Maintenance	The specific rules of the present technical memorandum do not define elements to declare in B2.
B3 Repair	The specific rules of the present technical memorandum do not define elements to declare in B3.
B4 Replacement	The specific rules of the present technical memorandum do not define elements to declare in B4.

B5 Restoration	The specific rules of the present technical memorandum do not define elements to declare in B5.
B6 Energy needs during use phase	Energy consumption of the reference product applying the use scenario as defined by the present technical memorandum. See 3.3.4.1 Energy consumption scenario
B7 Water needs during use phase	The specific rules of the present technical memorandum do not define elements to declare in B7

Table 3: content of modules B1 to B7

3.3.4.1. Energy consumption scenario (B6)

For the use stage, the default geographic area is Europe and shall be specified in the EPD. Any other geographical area shall be specified in the LCA report and in the EPD.

3.3.4.1.1. Non dimmable control gear

3.3.4.1.1.1. Reference use scenario

The default use scenario of a control gear is a continuous use at maximum power during the assigned lifetime of the control gear.

3.3.4.1.1.2. Energy consumption

The final energy consumption C of a **control gear** over its assigned lifetime, expressed in kilowatt-hours (kWh), is calculated as follows:

$C = P_{in} \times \text{Assigned lifetime}/1000$[1]

With Pin = Input power required to deliver the maximum power to the light source in Watt as defined in 3.1.3.1. and Assigned lifetime as defined in 3.1.3.2.

In case the (output) power of the control gear can be adjusted by changing the setting e.g. by a switch or via software, the input power required to provide the maximum power to the light source (3.1.3.1) shall be used.

[1] The power consumption, and therefore use/B6 stage impacts, of the control gear are established according to the maximum capacity of the control gear and this will lead to worst case impacts in the B6/use stage. In practice it is common for control gear to not be used at their maximum capacity in/with luminaires. Therefore, in the preparation of the EPD of a luminaire, its actual power consumption shall be considered.

3.3.4.1.2. Dimmable control gear

3.3.4.1.2.1. List of dimming functions

This paragraph is intended to deal with the most common dimming functions listed in table 4. Any other dimming function shall be described and justified in the LCA report.

Dimming function	Control gear capable of communicating with an external Light Management System	Description
Autonomous time-based dimming	No	Control gear whose power is varied autonomously based on the daytime
Dimmable control gear	Yes	Control gears with a control interface that can be connected to a light management system allowing daylight control and presence detection. The control interface may be either wired (e.g. DALI) or wireless (e.g. Zigbee).

Table 4 - Most common dimming functions

3.3.4.1.2.2. Reference use scenario

The default use scenario for a dimmable control gear is to manage the outgoing luminous flux over its assigned lifetime. It is considered that dimming does not influence the assigned lifetime.

Any other use scenario shall be justified in the LCA report and mentioned in the EPD.

3.3.4.1.2.3. Energy consumption

The final energy consumption C of a dimmable control gear over its assigned lifetime, expressed in kilowatt-hours (kWh), is calculated as follows:

$C = P_{in}$ x Assigned lifetime x Theoretical energy saving coefficient/1000

Pin = Input power required to deliver the maximum power to the light source in Watts as defined in 3.1.3.1.

The energy saving coefficients are associated with the various functions available on the control gear market[2]. The energy saving coefficients include the power consumption of the control gear in non-active mode (stand-by).

Dimming function	Theoretical reduction of energy consumption	Theoretical coefficient of energy saving
Autonomous time-based dimmable control gear	25%	0.75
Dimmable control gear that is capable of communicating with a Light Management System	50%	0.50

Table 5 – Energy saving coefficients according to dimming function

Any other dimming function shall be described with its energy saving coefficient justified in the LCA report.

3.3.5. End of life stage (C1 to C4)

The end-of-life treatment of the control gear is to be considered according to the requirements of the core PCR.

3.4. Environmental impact calculation

These rules are in addition to requirements set out in the core PCR.

The results of environmental impacts generated by the life cycle of reference product correspond to the environmental impacts at the declared unit level.

In order to evaluate the results of environmental impacts at the level of FU declared in the EPD (reminder: “Provide 10W of power to a light source during a reference lifetime of 35,000 hours”), the environmental impacts generated by the life cycle of the reference product must be brought back to the FU.

Calculations of environmental impacts of the manufacturing, distribution, installation, use and end-of-life stages are carried out as follows for each life cycle stage:

Environmental impacts of FU (10W over 35,000 hours) =
Environmental impacts of the DU x (10W/ maximum output power of the reference product in Watt) x (35,000 / Assigned product lifetime of the reference product in hours)

[2] Coefficients determined in a consensual way by the technical experts of the sector who participated in the development of this technical memorandum considering the values defined in PEP PSR0014 “Product Specific Rules for Luminaires Ed. 2.0.

4. Drawing up the Environmental Product Declaration

4.1. General information

The EPD should contain a clear identification of the product.
A listing of the technical data required to prepare the EPD shall be given in the EPD and should minimally contain: maximum output power [W], efficiency at maximum power [%] (η_{cg}), assigned lifetime [h] and, if applicable, the type of dimming function (autonomous or via interface). The technical data required to prepare the EPD shall be taken from the technical datasheet of the product and a link to the technical datasheet should be included in the EPD.
Additionally, the description of the components and accessories supplied with the control gear shall be provided in the EPD.

5. Appendices

5.1. Glossary

DU	Declared Unit
EU	European Union
EN	European Standards
EPD	Environmental Product Declaration
FU	Functional Unit
IEC	International Electrotechnical Commission
IEV	International Electrotechnical Vocabulary
ISO	International Standardization Organization
LCA	Life Cycle Assessment
LED	Light-Emitting Diode
LMS	Light Management System
PCR	Product Category Rules
PEP	Product Environmental Profile

PSR	Product Specific Rules
RSL	Reference Service Life (*also called* Reference Lifetime)
SDO	Standards Development Organizations

5.2. Definitions

ASSIGNED LIFETIME OF A CONTROL GEAR
The assigned lifetime of the control gear is the life expectancy as declared by the manufacturers according to the operating conditions of use provided by them, depending on maximum power provided to the light source, according to paragraph 3.1.3.1, and operating temperature.

CONTROL GEAR - CONTROLGEAR
A control gear for a light source according to this document is a unit inserted between the power supply and at least one light source, which serves to supply the light source(s) with its (their) rated voltage or rated current, and which can consist of one or more separate components.

Note 1 to entry: A control gear can include means for igniting, dimming, correcting the power factor and suppressing radio interference, and further control functions.
Note 2 to entry: A control gear can consist of a power supply and a control unit.
Note 3 to entry: A control gear can be partly or totally integrated in the light source.
Note 4 to entry: The terms "control gear" and "controlgear" are interchangeable. In IEC standards, the term "controlgear" is commonly used.
Note 5 to entry: A control gear can be integral to a luminaire or located remotely from a luminaire.
Note 6 to entry; A control gear considered to be for a luminaire can also be considered as a control gear for the light source within the luminaire in the context of this technical memorandum.
(according to IEV ref 845-28-048)

Additional note to entry: This document covers low voltage control gear (< 1000 Vac and < 1500 Vdc; in accordance with IEV 195-05-25).

DIMMABLE CONTROL GEAR
A dimmable control gear is an electronic device according to IEC 845-28-048 used to manage and regulate the power supplied to lighting systems or light sources, specifically allowing the light output to be adjusted to different levels.

CONTROL GEAR EFFICIENCY - η_{CG}
The control gear efficiency η_{cg} is defined by the ratio of P_{out}: Maximum power that a control gear can deliver to the light source in Watts to P_{in}: Input power required by the control gear to deliver maximum power to the light source in Watts:
$\eta_{cg}=P_{out}/P_{in}$

ELECTRIC LAMP
electric lamp means an electric light source with at least one cap/base which provides connection to the power supply by means of a lampholder (a device that supports the lamp in position, usually by having the cap/base inserted into it) or a lamp connector (a device consisting of electrical contacts, with insulation and mounted on flexible conductors that does not support the lamp)
(according to IEV 845-27-008, 845-28-015, IEV 845-28-025 and 845-28-035)

LED MODULE
LED light source having either at least one PCB cap or no cap, and incorporating at least one LED package

Note 1 to entry: An LED module can be an integrated LED module (LEDi module), a semi-integrated LED module (LEDsi module) (IEV) or a non-integrated LED module (LEDni module).
Note 2 to entry: An LED module is usually designed to be part of an LED lamp or an LED luminaire.
Note 3 to entry: An LED module can include one or more of the following: electric, optical, mechanical, and thermal components, interfaces and control gear.
(IEV ref 845-27-058)

LIGHT EMITTING DIODE – LED
solid-state device embodying a p-n junction, emitting incoherent optical radiation when excited by an electric current
(IEV ref 845-27-050)

LIGHT MANAGEMENT SYSTEM – LMS LIGHTING CONTROL SYSTEM
A system of electrical devices and techniques used for luminaire grouping / zoning and for regulation of one or more of the light luminaire output variables such as luminous intensity, colour temperature and colour.

LIGHT SOURCE
surface or object emitting light, typically an electric light source, commonly called “light source”, defined as primary light source with the means for connecting to the power supply and usually designed to be incorporated into a luminaire. An electric light source can be an electric lamp, or LED module designed to be connected by terminals, connectors or similar devices.
(According to IEV ref 845-27-001 and ref 845-27-004)

REFERENCE LIFETIME
REFERENCE SERVICE LIFE (RSL) lifetime that can be expected for equipment according to a particular set (reference set) of conditions of use and which can serve as a baseline for estimating service life under other conditions of use.
Note: The reference lifetime is also called typical. This is a theoretical service lifetime chosen for the purposes of the calculations. It cannot be assimilated to the minimum, average or actual life of the products.
(according to EN 50693)

LED LAMP
electric lamp based on LED technology

Note 1 to entry: An LED lamp can be an integrated LED lamp (LEDi lamp), or a semi-integrated LED lamp (LEDsi lamp), or a non-integrated LED lamp (LEDni lamp).
Note 2 to entry: LED lamps can incorporate at least one LED module.
(IEV 845-27-054)

5.3. References

- IEC 63366 – Product Category Rules for Life Cycle Assessment of Electrical and Electronic Products and Systems[3]
- EN 50693:2019 – Product Category Rules for Life Cycle Assessment of Electrical and Electronic Products and Systems
- EN 15804:2012 + A2:2019 – Sustainability of Construction works – Environmental product declarations – Core rules for the product category of construction products
- EN 45557:2020 – General method for assessing the proportion of recycled material content in energy-related products
- IBU PCR Part A – Calculation rules for the life cycle assessment and requirements for the project report in accordance with EN 15804 + A2:2019
- IBU PCR Part B - Requirements on the EPD for Luminaires, light sources and control gears
- PEP PCR ed4 – Product Category Rules for Electrical, Electronic and HVAC-R Products
- PEP PSR 0014 ed2 – Specific Rules for Luminaires

5.4. Bibliography

European Directives below are to be considered in their latest version in force:

- Directive 2014/35/EU and its amendments – on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
- Directive 2014/30/EU and its amendments – on the harmonization of the laws of the Member States relating to electromagnetic compatibility
- Directive 2012/19/EU and its amendments – on waste electrical and electronic equipment (WEEE)
- Directive 2011/65/EU and its amendments – on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
- Directive 2009/125/EU and its amendments – establishing a framework for the setting of ecodesign requirements for energy-related products (ErP)
- Commission Regulation 2019/2020/EU laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council

[3] For the status of publication see the IEC website: www.iec.ch

- Directive 2014/53/EU and its amendments – relating to the making available on the market of radio equipment

The applicable standards related to control gears, as specified CENELEC (European Committee for Electrotechnical Standardization) and IEC (International Electrotechnical Commission) must be complied with in their latest version in force:

- IEC 61000-3-2:2018/Amd2:2024 Electromagnetic compatibility (EMC) – Part 3-2: Limits - Limits on harmonic current emissions (current used by equipment not more than 16A per stage)
- IEC 61000-3-3:2013+Amd1:2017+Amd2:2021 Electromagnetic compatibility (EMC) – Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with declared current ≤16 A per stage and not subject to conditional connection.
- EN 55015:2019 - Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
- IEC 61547:2020 - Equipment for general lighting purposes - EMC immunity requirements
- IEC 61347-1:2015+Amd1:2017: Lamp controlgear - Part 1: General and safety requirements
- IEC 61347-2-1:2024 – Controlgear for electric light sources – Safety – Part 2-1: Particular requirements – Starting devices (other than glow starters)
- IEC 61347-2-2:2024 – Controlgear for electric light sources - Safety - Part 2-2: Particular requirements - Electric step-down convertors for filament lamps
- IEC 61347-2-3:2024 – Controlgear for electric light sources – Safety – Part 2-3: Particular requirements – AC or DC supplied electronic controlgear for fluorescent lamps
- IEC 61347-2-7:2011/AMD2:2021 – Lamp controlgear – Part 2-7: Particular requirements for electric source for safety services (ESSS) supplied electronic controlgear for emergency lighting (self-contained)
- IEC 61347-2-8:2024 – Controlgear for electric light sources – Safety – Part 2-8: Particular requirements – Ballasts for fluorescent lamps
- IEC 61347-2-9:2012 – Lamp controlgear – Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)
- IEC 61347-2-10:2024 – Controlgear for electric light sources – Safety – Part 2-10: Particular requirements – Electronic controlgear for high-frequency operation of tubular cold-cathode discharge lamps (neon tubes)
- IEC 61347-2-11:2001+AMD1:2017 – Lamp controlgear – Part 2-11: Particular requirements for miscellaneous electronic circuits used with luminaires
- IEC 61347-2-12:2024 – Controlgear for electric light sources – Safety – Part 2-12: Particular requirements – DC or AC supplied electronic controlgear for discharge lamps (excluding fluorescent lamps)
- IEC 61347-2-13:2014 – Lamp controlgear – Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
- IEC 61347-2-14:2018 – Lamp controlgear – Part 2-14: Particular requirements for DC and/or AC supplied electronic controlgear for fluorescent induction lamps
- IEC 62384:2020: DC or AC supplied electronic controlgear for LED modules - Performance requirements
- IEC 62442-1:2022 – Energy performance of lamp controlgear – Part 1: Controlgear for fluorescent lamps – Method of measurement to determine the total input power of controlgear circuits and the efficiency of controlgear
- IEC 62442-2:2022 – Energy performance of lamp controlgear – Part 2: Controlgear for discharge lamps (excluding low-pressure mercury fluorescent lamps) – Method of measurement to determine the efficiency of controlgear

- IEC 62442-3:2022 – Energy performance of lamp controlgear – Part 3: Controlgear for tungsten-halogen lamps and LED light sources – Method of measurement to determine the efficiency of controlgear

Contact

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LightingEurope is the voice of the lighting industry, based in Brussels and representing 32 companies and national associations. Together these members account for over 1,000 European companies, a majority of which are small or medium-sized. They represent a total European workforce of over 80,000 people and an annual turnover exceeding 15 billion euro. LightingEurope is committed to promoting efficient lighting that benefits human comfort, safety and wellbeing, and the environment. LightingEurope advocates a positive business and regulatory environment to foster fair competition and growth for the European lighting industry. More information is available at www.lightingeurope.org.