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Lamp controlgear - Part 1: General and safety requirements

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/15

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English Version

**Lamp controlgear - Part 1: General and safety requirements
(IEC 61347-1:2015)**

Appareillages de lampes - Partie 1: Exigences générales et
exigences de sécurité
(IEC 61347-1:2015)

Geräte für Lampen - Teil 1: Allgemeine und
Sicherheitsanforderungen
(IEC 61347-1:2015)

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Foreword

The text of document 34C/1118/FDIS, future edition 3 of IEC 61347-1, prepared by SC 34C, "Auxiliaries for lamps", of IEC TC 34, "Lamps and related equipment", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61347-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-12-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-03-26

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This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 61347-1:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60038	NOTE	Harmonized as EN 60038.
IEC 60155:1993	NOTE	Harmonized as EN 60155:1995.
IEC 60364-4-44	NOTE	Harmonized as HD 60364-4-444.
IEC 60598 (Series)	NOTE	Harmonized as EN 60598 (Series).
IEC 60664-3	NOTE	Harmonized as EN 60664-3.
IEC 60925:1989	NOTE	Harmonized as EN 60925:1991.
IEC 60925:1989/AMD1:1996	NOTE	Harmonized as EN 60925:1991/A1:1996.
IEC 60925:1989/AMD2:2001	NOTE	Harmonized as EN 60925:1991/A2:2001.
IEC 60927:2007	NOTE	Harmonized as EN 60927:2007.
IEC 60927:2007/AMD1:2013	NOTE	Harmonized as EN 60927:2007/A1:2013.

IEC 60929:2006	NOTE	Harmonized as EN 60929:2006.
IEC 60950-1	NOTE	Harmonized as EN 60950-1.
IEC 60990:1999	NOTE	Harmonized as EN 60990:1999.
IEC 61047:2004	NOTE	Harmonized as EN 61047:2004.
IEC 61347-2-1:2000	NOTE	Harmonized as EN 61347-2-1:2001.
IEC 61347-2-1:2000/AMD1:2005	NOTE	Harmonized as EN 61347-2-1:2001/A1:2006.
IEC 61347-2-2:2011	NOTE	Harmonized as EN 61347-2-2:2012.
IEC 62384	NOTE	Harmonized as EN 62384.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60065 (mod)	2001	Audio, video and similar electronic apparatus - Safety requirements	EN 60065	2002
-	-		+corrigendum Mar.	2006
-	-		+corrigendum Aug.	2007
-	-		+A11	2008
-	-		+A12	2011
IEC 60068-2-14	2009	Environmental testing -- Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60081	-	Double-capped fluorescent lamps - Performance specifications	EN 60081	-
IEC 60085	2007	Electrical insulation - Thermal evaluation and designation	EN 60085	2008
IEC 60112	2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
+A1	2009		+A1	2009
IEC 60216	series	Electrical insulating materials - Thermal endurance properties -- Part 1: Ageing procedures and evaluation of test results	EN 60216	series
IEC 60317-0-1	2013	Specifications for particular types of winding wires -- Part 0-1: General requirements - Enamelled round copper wire	EN 60317-0-1	2014
IEC 60384-14	-	Fixed capacitors for use in electronic equipment -- Part 14: Sectional specification - Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 60384-14	-
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	HD 243 S12	-
-	-		+corrigendum Oct.	-
+A1	1979		-	-
IEC 60449	1973	Voltage bands for electrical installations of buildings	HD 193 S2	1982
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+corrigendum May	1993
+A1	1999		+A1	2000
+A2	2013		+A2	2013
IEC 60598-1 (mod)	2014	Luminaires -- Part 1: General requirements and tests	EN 60598-1	2015

IEC 60598-2	series	Luminaires -- Part 2: Particular requirements -- Section 1: Fixed general purpose luminaires	EN 60598-2	series
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems -- Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60664-4	2005	Insulation coordination for equipment within low-voltage systems -- Part 4: Consideration of high-frequency voltage stress	EN 60664-4	2006
-	-		+corrigendum Oct. EN 60691	2006
IEC 60691	2002	Thermal-links - Requirements and application guide	EN 60691	2003
IEC 60695-2-10	-	Fire hazard testing -- Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure	EN 60695-2-10	-
IEC 60695-11-5	-	Fire hazard testing -- Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-
IEC 60730-2-3	-	Automatic electrical controls for household and similar use -- Part 2-3: Particular requirements for thermal protectors for ballasts for tubular fluorescent lamps	EN 60730-2-3	-
IEC 60884-2-4	-	Plugs and socket-outlets for household and similar purposes -- Part 2-4: Particular requirements for plugs and socket-outlets for SELV	-	-
IEC 60901	-	Single-capped fluorescent lamps - Performance specifications	EN 60901	-
IEC 60906-3	-	IEC System of plugs and socket-outlets for household and similar purposes -- Part 3: SELV plugs and socket-outlets, 16 A 6V, 12 V, 24 V, 48 V, a.c. and d.c.	-	-
IEC 60921	2004	Ballasts for tubular fluorescent lamps - Performance requirements	EN 60921	2004
+A1	2006		+A1	2006
IEC 60923	2005	Auxiliaries for lamps - Ballasts for discharge lamps (excluding tubular fluorescent lamps) - Performance requirements	EN 60923	2005
IEC 60950-1	-	Information technology equipment - Safety -- Part 1: General requirements	EN 60950-1	-
-	-		+A11	-
-	-		+A12	-
-	-		+AC	-
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment -- Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
IEC 61189-2	2006	Test methods for electrical materials, printed boards and other interconnection structures and assemblies -- Part 2: Test methods for materials for interconnection structures	EN 61189-2	2006
IEC 61249-2	series	Materials for printed boards and other interconnecting structures -- Part 2-1: Reinforced base materials, clad and unclad - Phenolic cellulose paper reinforced laminated sheets, economic grade, copper-clad	EN 61249-2	series
IEC 61347-2	series	Lamp controlgear -- Part 2-1: Particular requirements for starting devices (other than glow starters)	EN 61347-2	series
-	-		+corrigendum Jul.	-
-	-		+corrigendum Dec.	-

EN 61347-1:2015

IEC 61347-2-8	-	Lamp controlgear -- Part 2-8: Particular requirements for ballasts for fluorescent lamps	EN 61347-2-8	-
-	-		+corrigendum Jul.	-
-	-		+corrigendum Dec.	-
IEC 61347-2-9	2012	Lamp controlgear -- Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)	EN 61347-2-9	2013
IEC 61558-1	2005	Safety of power transformers, power supplies, reactors and similar products -- Part 1: General requirements and tests	EN 61558-1	2005
-	-		+corrigendum Aug.	2006
IEC 61558-2-6	2009	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V -- Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers	EN 61558-2-6	2009
IEC 61558-2-16	2009	Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V -- Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units	EN 61558-2-16	2009
ISO 4046-4	2002	Paper, board, pulps and related terms - Vocabulary -- Part 4: Paper and board grades and converted products	-	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Lamp controlgear –
Part 1: General and safety requirements**

**Appareillages de lampes –
Partie 1: Exigences générales et exigences de sécurité**



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Lamp controlgear –
Part 1: General and safety requirements**

**Appareillages de lampes –
Partie 1: Exigences générales et exigences de sécurité**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMP CONTROLGEAR –**Part 1: General and safety requirements****FOREWORD**

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International Standard IEC 61347-1 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

This third edition cancels and replaces the second edition published in 2007, Amendment 1:2010 and Amendment 2:2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) additional marking requirements;
- b) additional requirements for creepage distances and clearances:
 - for working voltages with operating frequencies up to 30 kHz;
 - for working voltages with higher operating frequencies than 30 kHz;
 - for impulse and resonance voltages ignition;
 - for basic, supplementary and reinforced insulation;

- for insulation between circuits;
for coated or potted controlgear;
- c) modification of definition of ELV and FELV;
 - d) modification of schematic drawing, showing the different controlgear classification and insulation requirements;
 - e) scope extension;
 - f) new Annex A: test to establish whether a conductive part is a live part which may cause an electric shock;
 - g) new Annex M: creepage distances and clearances for controlgear where a higher degree of availability (impulse withstand category III) may be requested;
 - h) new Annex Q: example for U_p calculation;
 - i) new Annex P: creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting;
 - j) new Annex R: concept of creepage distances and clearances.

The text of this standard is based on the following documents:

FDIS	Report on voting
34C/1118/FDIS	34C/1135/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 1 is to be used in conjunction with the appropriate Part 2, which contains clauses to supplement or modify the corresponding clauses in Part 1, to provide the relevant requirements for each type of product.

NOTE In this standard, the following print types are used.

- Requirements proper: in roman type.
- *Test specifications: in italic type.*
- Explanatory matter: in smaller roman type.

A list of all parts of the IEC 61347 series, published under the general title *Lamp controlgear*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

INTRODUCTION

This part of IEC 61347 provides a set of general and safety requirements and tests which are considered to be generally applicable to most types of lamp controlgear and which can be called up as required by the different parts that make up IEC 61347-2. This Part 1 is thus not to be regarded as a specification in itself for any type of lamp controlgear, and its provisions apply only to particular types of lamp controlgear, to the extent determined by the appropriate Part 2 of IEC 61347.

The parts which make up IEC 61347-2, in referring to any of the clauses of this part, specify the extent to which such a clause is applicable and the order in which the tests are to be performed; they also include additional requirements as necessary. The order in which the clauses of this part are numbered has no particular significance, as the order in which their provisions apply is determined for each type of lamp controlgear by the appropriate Part 2 of the IEC 61347-2 series. All such parts are self-contained and therefore do not contain references to each other.

Where the requirements of any of the clauses of this part of IEC 61347 are referred to in the various parts that make up IEC 61347-2 by the phrase "The requirements of clause n of IEC 61347-1 apply", this phrase will be interpreted as meaning that all requirements of the clause in question of Part 1 apply, except any which are clearly inapplicable to the particular type of lamp controlgear covered by the Part 2 concerned.

Lamp controlgear which complies with the text of this standard will not necessarily be judged to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

Lamp controlgear employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirement and, if found to be substantially equivalent, may be judged to comply with the safety principles of the standard.

Performance requirements for lamp controlgear are the subject of IEC 60921, IEC 60923, IEC 60925, IEC 60927, IEC 60929, IEC 61047 and IEC 62384 as appropriate for the type of lamp controlgear.

Safety requirements ensure that electrical equipment constructed in accordance with these requirements does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was intended.

Requirements for electronic lamp controlgear for other types of lamps will be the subject of a separate standard, as the need arises.

Controlgear can consist of a printed circuit board and may incorporate the following:

- controlgear;
- lampholder(s);
- switch(es);
- supply terminals.

The lamp controlgear should comply with this standard.

The lampholders(s), switch(es) and supply terminals should comply with their own standards.

LAMP CONTROLGEAR –

Part 1: General and safety requirements

1 Scope

This part of IEC 61347 specifies general and safety requirements for lamp controlgear for use on d.c. supplies up to 250 V and/or a.c. supplies up to 1 000 V at 50 Hz or 60 Hz.

This standard also covers lamp controlgear for lamps which are not yet standardized.

Tests dealt with in this standard are type tests. Requirements for testing individual lamp controlgear during production are not included.

Requirements for semi-luminaires are given in IEC 60598-1:2014 (see definition 1.2.60).

Particular requirements for controlgears providing safety extra low voltage (from now on SELV) are given in Annex L.

It can be expected that lamp control gear which comply with this standard will not compromise safety between 90 % and 110 % of their rated supply voltage in independent use and when operated in luminaires complying with the safety standard IEC 60598-1 and the relevant part IEC 60598-2-xx and with lamps complying with the relevant lamp standards. Performance requirements may require tighter limits.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60065:2001¹, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60081, *Double-capped fluorescent lamps – Performance specifications*

IEC 60085:2007, *Electrical insulation – Thermal classification and designation*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009

IEC 60216 (all parts), *Electrical insulating materials – Thermal endurance properties*

IEC 60317-0-1:2013, *Specifications for particular types of windings wires – Part 0-1: General requirements – Enamelled round copper wire*

¹ Seventh edition. This edition has been replaced in 2014 by IEC 60065:2014.

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60417, *Graphical symbols for use on equipment*. Available at <http://www.graphical-symbols.info/equipment>

IEC 60449:1973, *Voltage bands for electrical installations of buildings*
IEC 60449:1973/AMD1:1979

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60598-1:2014, *Luminaires – Part 1: General requirements and tests*

IEC 60598-2, (all parts), *Luminaires – Part 2: Particular requirements*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60691:2002, *Thermal-links – Requirements and application guide*

IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60730-2-3, *Automatic electrical controls for household and similar use – Part 2: Particular requirements for thermal protectors for ballasts for tubular fluorescent lamps*

IEC 60884-2-4, *Plugs and socket-outlets for household and similar purposes – Part 2-4: Particular requirements for plugs and socket outlets for SELV*

IEC 60901, *Single-capped fluorescent lamps – Performance specifications*

IEC 60906-3, *IEC System of plugs and socket-outlets for household and similar purposes – Part 3: SELV plugs and socket-outlets, 16 A 6 V, 12 V, 24 V, 48 V, a.c. and d.c.*

IEC 60921:2004, *Ballasts for tubular fluorescent lamps – Performance requirements*
IEC 60921:2004/AMD1:2006

IEC 60923:2005, *Auxiliaries for lamps – Ballasts for discharge lamps (excluding tubular fluorescent lamps) – Performance requirements*

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*

IEC 61180-1:1992, *High-voltage test techniques for low voltage equipment – Part 1: Definitions, test and procedure requirements*

IEC 61189-2:2006, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 2: Test methods for materials for interconnection structures*

IEC 61249-2 (all parts), *Materials for printed boards and other interconnecting structures*

IEC 61347-2 (all parts), *Lamp controlgear – Part 2: Particular requirements*

IEC 61347-2-8, *Lamp controlgear – Part 2-8: Particular requirements for ballasts for fluorescent lamps*

IEC 61347-2-9:2012, *Lamp controlgear – Part 2-9: Particular requirements electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)*

IEC 61558-1:2005, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

IEC 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

IEC 61558-2-16:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units*

ISO 4046-4:2002, *Paper, board, pulp and related terms – Vocabulary – Part 4: Paper and board grades and converted products*

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