VALGUSTID. OSA 1: ÜLDNÕUDED JA KATSETUSED

Luminaires - Part 1: General requirements and tests (IEC 60598-1:2020)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60598-1:2021 +A11:2022 sisaldab Euroopa standardi EN IEC 60598-1:2021 ja selle muudatuse A11:2022 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60598-1:2021 +A11:2022 consists of the English text of the European standard EN IEC 60598-1:2021 and its amendment A11:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.03.2021, muudatused A11 08.04.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 19.03.2021, for A11 08.04.2022.
Muudatusega A11 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A11] 〈A11〉. Selles standardis on rahvusvahelise standardi ühismuudatused tähistatud püstkriipsuga teksti vasakul veerisel. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags [A11] 〈A11〉. In this document, the common modifications to the International Standard are indicated by a vertical line in the left margin of the text. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.140.40

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60598-1 + A11

March 2021, April 2022

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Supersedes EN 60598-1:2015 and all of its amendments and corrigenda (if any)

English Version

Luminaires - Part 1: General requirements and tests (IEC 60598-1:2020)

Luminaires - Partie 1: Exigences générales et essais (IEC 60598-1:2020)

Leuchten - Teil 1: Allgemeine Anforderungen und Prüfungen (IEC 60598-1:2020)

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60598-1:2021 E + EN IEC 60598-1:2021/A11:2022 E

European foreword

The text of document 34D/1546/FDIS, future edition 9 of IEC 60598-1, prepared by SC 34D "Luminaires" of IEC/TC 34 "Lighting" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60598-1:2021.

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) 2021-09-19
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-03-19

This document supersedes EN 60598-1:2015 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

⟨A11⟩ The text of the International Standard IEC 60598-1:2020 was approved by CENELEC as a European Standard with agreed common modifications. ⟨A11⟩

IEC 60079 (series)	NOTE	Harmonized as EN IEC 60079-7:2015/A1 (series)
IEC 60081	NOTE	Harmonized as EN 60081
IEC 60216 (series)	NOTE	Harmonized as EN 60216 (series)
IEC 60228:2004	NOTE	Harmonized as EN 60228:2005 (not modified)
IEC 60269 (series)	NOTE	Harmonized as EN 60269 (series)
IEC 60357	NOTE	Harmonized as EN 60357
IEC 60364 (series)	NOTE	Harmonized as HD 60364 (series)
IEC 60364-4-41:2005	NOTE	Harmonized as HD 60364-4-41:2017
IEC 60364-5-51	NOTE	Harmonized as HD 60364-5-51
IEC 60364-7-701	NOTE	Harmonized as HD 60364-7-701
IEC 60364-7-702	NOTE	Harmonized as HD 60364-7-702
IEC 60400	NOTE	Harmonized as EN 60400
IEC 60432-3	NOTE	Harmonized as EN 60432-3

IEC 60598-2-3	NOTE	Harmonized as EN 60598-2-3
IEC 60598-2-5	NOTE	Harmonized as EN 60598-2-5
IEC 60634	NOTE	Harmonized as EN 60634
IEC 60664 (series)	NOTE	Harmonized as EN 60664 (series)
IEC 60664-1:2007	NOTE	Harmonized as EN 60664-1:2007 (not modified)
IEC 60664-3	NOTE	Harmonized as EN 60664-3
IEC 60682	NOTE	Harmonized as EN 60682
IEC 60695 (series)	NOTE	Harmonized as EN 60695 (series)
IEC 60695-2 (series)	NOTE	Harmonized as EN 60695-2-13:2010/A1 (series)
IEC 60695-10-2	NOTE	Harmonized as EN 60695-10-2
IEC 60838 (series)	NOTE	Harmonized as EN 60838 (series)
IEC 60901	NOTE	Harmonized as EN 60901
IEC 60921	NOTE	Harmonized as EN 60921
IEC 60923	NOTE	Harmonized as EN 60923
IEC 60929	NOTE	Harmonized as EN 60929
IEC 60950-1:2005	NOTE	Harmonized as EN 60950-1:2006
IEC 61184	NOTE	Harmonized as EN 61184
IEC 61195	NOTE	Harmonized as EN 61195
IEC 61199:2011	NOTE	Harmonized as EN 61199:2011 (not modified)
IEC 61199:2011/A1:2012	NOTE	Harmonized as EN 61199:2011/A1:2013 (not modified)
IEC 61199:2011/A2:2014	NOTE	Harmonized as EN 61199:2011/A2:2015 (not modified)
IEC 61210	NOTE	Harmonized as EN 61210
IEC 61558-2-5	NOTE	Harmonized as EN 61558-2-5
IEC 61995 (series)	NOTE	Harmonized as EN 61995-2:2009/A1 (series)
IEC 62031	NOTE	Harmonized as EN IEC 62031
IEC 62035	NOTE	Harmonized as EN 62035
IEC 62368 (series)	NOTE	Harmonized as EN IEC 62368 (series)
IEC 62471:2006	NOTE	Harmonized as EN 62471:2008
IEC 62504:2014	NOTE	Harmonized as EN 62504:2014 (not modified)

A11 Amendment A11 European foreword

This document (EN IEC 60598-1:2021/A11:2022) has been prepared by CLC/TC 34 ”Lighting”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-02-16
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2025-02-16

This document amends EN IEC 60598-1:2021.

This amendment was developed to introduce common modifications and special national conditions in EN IEC 60598-1:2021.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s)) / Regulation(s), see informative Annex ZZ, which is an integral part of EN IEC 60598-1:2021.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website. A11

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INTERNATIONAL STANDARD

Luminaires –
Part 1: General requirements and tests

IEC 60598-1:2020-08(en)

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67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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INTERNATIONAL STANDARD

Luminaires –
Part 1: General requirements and tests

INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LUMINAIRES –

Part 1: General requirements and tests

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60598-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

This ninth edition cancels and replaces the eighth edition published in 2014 and Amendment 1:2017. This edition constitutes a technical revision.

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

a) Revision of Clause 4.30, Fixing cover live parts of non-user replaceable light source;
b) Subclause 4.24.2, Blue Light Hazard: removal of Risk Group 0;
c) Subclause 5.2.16: additional requirements for AC mains appliance inlets related to IEC 61984;
d) Addition of Subclause 3.3.25, UV protection of cable;
e) Addition of Clause 4.34, Inclusion of EMF safety requirements (IEC 62493);
f) Revision of the requirements for functional earth and protective earth;

g) Addition of Clause 4.35, Protection against fast rotating parts;
h) Revision of Clause 3.2, Rated voltage marking;
i) Revision of Subclause 5.2.10, Cord anchorage;
j) Revision of Annex G for touch current and protective conductor current test set-up;
k) Addition of requirements for constant light output function and programmable current output;
l) Revision of Subclause 8.2.3 c), touch voltage limits for interrupted DC voltage;
m) Introduction of PELV;
n) Introduction of Ethernet power supply connection for luminaires (PoE);
o) Section 9, Introduction of IPX9;
p) Addition of Subclause 3.3.26 for wall mounted luminaires;
q) Revision of Annex D introducing alternative thermal tests for luminaires with t_a marking higher than 25°C;
r) Revision of Table 10.3 and Subclause 3.3.19 for protective conductor current limits;
s) Track-mounted luminaires: cross reference to Annex A of IEC 60570:2003/AMD2:2019;
t) Revision of Subclause 10.2.2, alternative DC electric strength test;
u) Revision of Annex D for recessed luminaires;
v) Subclause 4.12.5: revision of Table 4.2 for torque test on metal glands;
w) Revision of use of bridging capacitors in luminaires;
x) Revision of electrical connection to class III plugs.

The major changes which may affect certification are given in Annex R.

Annex R shows where a new text has been included which contains more serious/critical requirements requiring products to be re-tested.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
34D/1546/FDIS	34D/1560/RVD

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

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

A list of all parts in the IEC 60598 series, published under the general title *Luminaires*, can be found on the IEC website.

NOTE In this document, the following print types are used:

– requirements: in roman type;
– *test specifications: in italic type;*
– notes: in small roman type.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document 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 document using a colour printer.

LUMINAIRES –

Part 1: General requirements and tests

SECTION 0: GENERAL INTRODUCTION

0.1 Scope

This Part 1 of IEC 60598 specifies general requirements for luminaires, incorporating electric light sources for operation from supply voltages up to 1 000 V. The requirements and related tests of this document cover: classification, marking, mechanical construction, electrical construction and photobiological safety.

Each section of this Part 1 is read in conjunction with this Section 0 and with other relevant sections to which reference is made.

Each part of IEC 60598-2 details requirements for a particular type of luminaire or group of luminaires on supply voltages not exceeding 1 000 V. These parts are published separately for ease of revision and additional sections will be added as and when a need for them is recognized.

The presentation of photometric data for luminaires is under consideration by the International Commission on Illumination (CIE) and is not, therefore, included in this Part 1.

Requirements are included in this Part 1 for luminaires incorporating ignitors with nominal peak values of the voltage pulse not exceeding those of Table 11.2. The requirements apply to luminaires with ignitors built into ballasts and to luminaires with ignitors separate from ballasts. For luminaires with ignitors built into lamps, the requirements are under consideration.

Requirements for semi-luminaires are included in this Part 1.

In general, this Part 1 covers safety requirements for luminaires. The object of this Part 1 is to provide a set of requirements and tests which are considered to be generally applicable to most types of luminaires and which can be called up as required by the detail specifications of IEC 60598-2. This Part 1 is thus not regarded as a specification in itself for any type of luminaire, and its provisions apply only to particular types of luminaires to the extent determined by the appropriate part of IEC 60598-2.

The parts of IEC 60598-2, in making reference to any of the sections of Part 1, specify the extent to which that section is applicable and the order in which the tests are performed; they also include additional requirements as necessary.

The order in which the sections of Part 1 are numbered has no particular significance as the order in which their provisions apply is determined for each type of luminaire or group of luminaires by the appropriate part of IEC 60598-2. All parts of IEC 60598-2 are self-contained and therefore do not contain references to other parts of IEC 60598-2.

Where the requirements of any of the sections of Part 1 are referred to in the parts of IEC 60598-2 by the phrase "The requirements of section... of IEC 60598-1 apply", this phrase is interpreted as meaning that all the requirements of that section of Part 1 apply except those which are clearly inapplicable to the particular type of luminaire covered by that part of IEC 60598-2.

For explosion proof luminaires, as covered by IEC 60079, the requirements of IEC 60598 (selecting the appropriate parts 2) are applied in addition to the requirements of IEC 60079. In the event of any conflict between IEC 60598 and IEC 60079, the requirements of IEC 60079 take priority.

Improvements in safety to take into account the state of the art technology are incorporated in the standards with revisions and amendments on an ongoing basis. Regional standardization bodies can include statements in their derived standards to cover products which have complied with the previous document as shown by the manufacturer or standardization body. The statements may require that for such products, the previous standard may continue to apply to production until a defined date after which the new standard shall apply.

0.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety* (available at http://std.iec.ch/iec60061)

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders* (available at http://std.iec.ch/iec60061)

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges* (available at http://std.iec.ch/iec60061)

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

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

IEC 60068-2-31:2008, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

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

IEC 60155, *Glow-starters for fluorescent lamps*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60238:2016, *Edison screw lampholders*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60360, *Standard method of measurement of lamp cap temperature rise*

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 60432-1:1999, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*
IEC 60432-1:1999/AMD1:2005
IEC 60432-1:1999/AMD2:2011

IEC 60432-2:1999, *Incandescent lamps – Safety specifications –Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*
IEC 60432-2:1999/AMD1:2005
IEC 60432-2:1999/AMD2:2012

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60570:2003, *Electrical supply track systems for luminaires*
IEC 60570:2003/AMD1:2017
IEC 60570:2003/AMD2:2019

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

IEC 60598-2-4:2017, *Luminaires – Part 2-4: Particular requirements – Portable general purpose luminaires*

IEC 60603 (all parts), *Connectors for frequencies below 3 MHz for use with printed boards*

IEC 60662, *High-pressure sodium vapour lamps – Performance specifications*

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

IEC 60684 (all parts), *Flexible insulating sleeving*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

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

IEC 60989, *Separating transformers, autotransformers, variable transformers and reactors*

IEC 60990, *Methods of measurement of touch current and protective conductor current*

IEC 60998-2-1, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2000[1], *Switches for appliances – Part 1: General requirements*

IEC 61167, *Metal halide lamps – Performance specification*

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

IEC 61347 (all parts), *Lamp controlgear*

IEC 61347-1:2015, *Lamp controlgear – Part 1: General and safety requirements*
IEC 61347-1:2015/AMD1:2017

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

IEC 61535:2009[2], *Installation couplers intended for permanent connection in fixed installations*

IEC 61558 (all parts), *Safety of power transformers, power supplies, reactors and similar products*

IEC 61558-1:2005[3], *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

IEC 61558-2-6, *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 61643-11, *Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and test methods*

IEC 61984:2008, *Connectors – Safety requirements and tests*

IEC 62368-3:2017, *Audio/video, information and communication technology equipment – Part 3: Safety aspects for DC power transfer through communication cables and ports*

IEC 62493:2015, *Assessment of lighting equipment related to human exposure to electromagnetic fields*

IEC 62680 (all parts), *Universal serial bus interfaces for data and power*

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1 Withdrawn.

2 Withdrawn.

3 Withdrawn.

IEC TR 62778, *Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires*

IEC 80416-1, *Basic principles for graphical symbols for use on equipment – Part 1: Creation of graphical symbol for registration*

0.3 General requirements

0.3.1 Luminaires shall be so designed and constructed that in normal use they function safely and cause no danger to persons or surroundings. In general, compliance is checked by carrying out all the tests specified.

0.3.2 A luminaire shall comply with a part of IEC 60598-2. If, however, an appropriate part of IEC 60598-2 does not exist for a particular luminaire or group of luminaires, the nearest applicable part of IEC 60598-2 may be used as a guide to the requirements and tests.

Where the design of a luminaire is such that two or more parts of IEC 60598-2 are applicable, the luminaire shall comply with both or all of the appropriate sections.

0.3.3 Semi-luminaires should be regarded as luminaires for test purposes.

0.4 General test requirements and verification

0.4.1 Tests according to this document are type tests. For the definition of a "type test", see Section 1.

The requirements and tolerances permitted by this document are related to testing of a type test sample submitted for that purpose. Compliance of the type test sample does not ensure compliance of the whole production of a manufacturer. Compliance for production is the responsibility of the manufacturer and may include routine tests and quality assurance in addition to type testing.

0.4.2 Except where otherwise specified in the sections of this document or relevant part of IEC 60598-2, luminaires shall be tested as delivered, and installed as for normal use, in an ambient temperature of between 10 °C and 30 °C, having regard to the manufacturer's installation instructions. The lamp (or lamps) is (are) not included except where essential for the test.

Luminaires cannot be regarded as meeting the requirements of this document unless all internal wiring is complete.

In general, the tests are made on a single sample luminaire or, where a range of similar luminaires is involved, on a single luminaire of each rated wattage in the range or on a representative selection from the range as agreed with the manufacturer (see Annex S). This selection shall include the luminaire, together with any attachments, which represents the most unfavourable combination from a testing point of view.

Each sample luminaire shall comply with all the relevant tests. In order to reduce the time of testing and to allow for any tests which may be destructive, the manufacturer may submit additional luminaires or parts of luminaires, provided that these are of the same materials and design as the original luminaire and that the results of the test are the same as if carried out on an identical luminaire. Where the test for compliance is shown as being "by inspection", this shall include any necessary handling.

For track-mounted luminaires the manufacturer shall provide, together with the luminaire, a sample of the appropriate track, connector and adaptors for the luminaire to be connected.