SVENSK STANDARD

SS-EN IEC 62722-2-1, utg 2:2023

2023-10-18



# COMMENTED VERSION

## Prestanda hos ljusarmatur –
## Del 2-1: Särskilda fordringar på ljusarmatur med LED

*Luminaire performance –*
*Part 2-1: Particular requirements for LED luminaires*

En så kallad ”Commented Version” (CMV) innehåller både den fastställda IEC-standarden och en kommenterad och ändringsmarkerad standard. Alla tillägg och borttagningar sedan den tidigare utgåvan är markerade med färg. Med en CMV sparar du mycket tid när du ska identifiera och förklara aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut CMV i de fall den finns tillgänglig från IEC.

# IEC 62722-2-1

Edition 2.0 2023-01
COMMENTED VERSION

# INTERNATIONAL STANDARD

colour inside

## Luminaire performance –
## Part 2-1: Particular requirements – LED luminaires

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.140.40

ISBN 978-2-8322-6432-4

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# LUMINAIRE PERFORMANCE –

# Part 2-1: Particular requirements – LED luminaires

## 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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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.

**This commented version (CMV) of the official standard IEC 62722-2-1:2023 edition 2.0 allows the user to identify the changes made to the previous IEC 62722-2-1:2014 edition 1.0. Furthermore, comments from IEC SC 34D experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.**

**A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.**

**This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.**

IEC 62722-2-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lighting. It is an International Standard.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

a) alignment with IEC 62717:2014, IEC 62717:2014/AMD1:2015 and IEC 62717:2014/AMD2:2019;
b) clarification of temperature requirements for the maintenance test, in 10.2 and Annex A;
c) introduction of a new Annex C on methods for calculation and measurements of parameters for extension of electric and photometric data.

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

| Draft | Report on voting |
|---|---|
| 34D/1680/FDIS | 34D/1687/RVD |

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 62722 series, published under the general title *Luminaire performance* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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 document 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.**

# INTRODUCTION

~~This standard is the conversion of IEC PAS 62722-2-1 into a full IEC performance standard for LED luminaires for general lighting applications.~~ This document acknowledges the need for relevant tests for luminaires using ~~this new source of~~ LED as an electrical light source **1**. This document is seen in close context with the publication of simultaneously developed performance standards for luminaires in general and for LED modules. This document does not consider luminaires designed for LED lamps, which are covered in IEC 62722-1. Changes in LED luminaires standards have an impact on LED module standards and vice versa, due to the behaviour of LED. Therefore, for the development of this document, the mutual consultancy of experts of both products has taken place.

The provisions in this document represent the technical knowledge of experts from the fields of the semiconductor (LED chip) industry and of the traditional electrical light sources and luminaires.

As this document has been simultaneously developed and edited with the standard for LED modules (IEC 62717), where appropriate, the compliance of the LED modules with the provisions of IEC 62717 can be transferred to the whole luminaire.

# LUMINAIRE PERFORMANCE –

# Part 2-1: Particular requirements – LED luminaires

## 1 Scope

This part of IEC 62722 specifies the performance requirements for LED luminaires, together with the test methods and conditions~~, required to show compliance with this standard~~. It applies to LED luminaires for general lighting purposes.

Semi-luminaires are not covered under the scope of this document.

For some types of luminaires (e.g. decorative or household) the provision of performance data under the scope of this document is not appropriate. **2**

In this document, the following types of LED luminaires are distinguished.

– Type A – Luminaires using LED modules where compliance with IEC 62717[1] ~~has been proven~~ is given.

– Type B – Luminaires using LED modules where compliance with IEC 62717[1] ~~has not been proven~~ is not given.

~~– Type C – Luminaires using a LED lamp and covered in IEC 62722-1.~~

Luminaires using an LED lamp are covered in IEC 62722-1 and are not within the scope of this document. **3**

The requirements of this document ~~only~~ relate to type testing.

~~This standard does not cover Type C luminaires.~~

~~This standard does not cover LED luminaires that intentionally produce coloured light, neither does it cover luminaires using OLEDs (organic LEDs).~~

~~These performance requirements are additional to the requirements in IEC 62722-1, Clauses 1 to 9, except where in this Part 2-1 alternative methods of measurement or limits are specified.~~ **4**

~~As this standard has been simultaneously developed and edited with the standard for LED modules, where appropriate the compliance of the LED modules to the provisions of IEC 62717 may be transferred to the whole luminaire.~~

This document covers LED luminaires using LED modules, based on inorganic LED technology that produces white light. It does not cover luminaires using light sources based on OLED technology (organic LED technology). **5**

The lifetime of LED luminaires is in most cases much longer than the practical test times. Consequently, the verification of manufacturer's lifetime claims ~~cannot be made in a sufficiently confident way. For that reason the acceptance or rejection of a manufacturer's life time claim, past 25 % of rated life (with a maximum of 6 000 h),~~ **6** is out of the scope of this document.

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[1] ~~To be published.~~

Instead of lifetime validation, this document has opted for lumen maintenance categories at a defined finite test time. Therefore, the category number does not imply a prediction of achievable lifetime. The categories are lumen-depreciation character categories showing behaviour in agreement with the manufacturer's information which is provided before the test is started.

~~In order to validate a life time claim, an extrapolation of test data is needed. A general method of projecting measurement data beyond limited test time is under consideration.~~

~~For explanation of recommended life time metrics see IEC 62717, Annex C.~~

~~It may be expected that LED luminaires which comply with this standard will start and operate satisfactorily at voltages between 92 % and 106 % of rated supply voltage and at an ambient air temperature within the declared range of the manufacturer.~~

~~Evaluation of LOR (light output ratio) for LED luminaire is under consideration.~~

## 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 60598-1:2020, *Luminaires – Part 1: General requirements and tests*

IEC 60598-2-3:2002, *Luminaires – Part 2-3: Particular requirements – Luminaires for road and street lighting*

IEC 60598-2-5:2015, *Luminaires – Part 2-5: Particular requirements – Floodlights*

IEC 62031:2018, *LED modules for general lighting – Safety specifications*

~~IEC 62504, *General lighting – LEDs and LED modules – Terms and definitions*~~

IEC 62717:2014, *LED modules for general lighting – Performance requirements*
IEC 62717:2014/AMD1:2015
IEC 62717:2014/AMD2:2019

IEC 62722-1, *Luminaire performance – Part 1: General requirements*

SVENSK STANDARD

SS-EN IEC 62722-2-1, utg 2:2023

| Fastställd | Sida | Ansvarig kommitté |
|---|---|---|
| 2023-10-18 | 1 (32) | SEK TK 34 |



# Prestanda hos ljusarmatur – Del 2-1: Särskilda fordringar på ljusarmatur för LED

*Luminaire performance – Part 2-1: Particular requirements for LED luminaires*

Som svensk standard gäller europastandarden EN IEC 62722-2-1:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62722-2-1:2023.

**Nationellt förord**

Europastandarden EN IEC 62722-2-1:2023

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62722-2-1, Second edition, 2023 - Luminaire performance – Part 2-1: Particular requirements for LED luminaires**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62722-2-1, utg 1:2016 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-02-28.

ICS 29.140.40

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1284, 164 29 KISTA
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E-post: sek@elstandard.se. Internet: www.elstandard.se

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Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

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Box 1284
164 29 Kista
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN IEC 62722-2-1

March 2023

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Supersedes EN 62722-2-1:2016

English Version

# Luminaire performance - Part 2-1: Particular requirements - LED luminaires (IEC 62722-2-1:2023)

Performance des luminaires - Partie 2-1: Exigences particulières - Luminaires à LED (IEC 62722-2-1:2023)

Arbeitsweise von Leuchten - Teil 2-1: Besondere Anforderungen an LED-Leuchten (IEC 62722-2-1:2023)

This European Standard was approved by CENELEC on 2023-02-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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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 62722-2-1:2023 E

SEK Svensk Elstandard

SS-EN IEC 62722-2-1, utg 2:2023

# European foreword

The text of document 34D/1680/FDIS, future edition 2 of IEC 62722-2-1, 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 62722-2-1:2023.

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) 2023-11-28 |
| • | latest date by which the national standards conflicting with the document have to be withdrawn | (dow) 2026-02-28 |

This document supersedes EN 62722-2-1:2016 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.

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.

## Endorsement notice

The text of the International Standard IEC 62722-2-1:2023 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62442-3 NOTE Approved as EN IEC 62442-3

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60598-1 | 2020 | Luminaires - Part 1: General requirements and tests | EN IEC 60598-1 | 2021 |
| IEC 60598-2-3 | 2002 | Luminaires - Part 2-3: Particular requirements - Luminaires for road and street lighting | EN 60598-2-3 | 2003 |
| - | - | | + corrigendum Aug. | 2005 |
| IEC 60598-2-5 | 2015 | Luminaires - Part 2-5: Particular requirements - Floodlights | EN 60598-2-5 | 2015 |
| IEC 62031 | 2018 | LED modules for general lighting - Safety specifications | EN IEC 62031 | 2020 |
| - | - | | + A11 | 2021 |
| IEC 62717 | 2014 | LED modules for general lighting - Performance requirements | EN 62717 | 2017 |
| + A1 | 2015 | | - | - |
| + A2 | 2019 | | + A2 | 2019 |
| IEC 62722-1 | - | Luminaire performance - Part 1: General requirements | EN IEC 62722-1 | - |

# IEC 62722-2-1

Edition 2.0 2023-01

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

colour inside

## Luminaire performance – Part 2-1: Particular requirements – LED luminaires

## Performance des luminaires – Partie 2-1: Exigences particulières – Luminaires à LED

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# LUMINAIRE PERFORMANCE –

# Part 2-1: Particular requirements – LED luminaires

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a) alignment with IEC 62717:2014, IEC 62717:2014/AMD1:2015 and IEC 62717:2014/AMD2:2019;
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| Draft | Report on voting |
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# INTRODUCTION

This document acknowledges the need for relevant tests for luminaires using LED as an electrical light source. This document is seen in close context with the publication of simultaneously developed performance standards for luminaires in general and for LED modules. This document does not consider luminaires designed for LED lamps, which are covered in IEC 62722-1. Changes in LED luminaires standards have an impact on LED module standards and vice versa, due to the behaviour of LED. Therefore, for the development of this document, the mutual consultancy of experts of both products has taken place.

The provisions in this document represent the technical knowledge of experts from the fields of the semiconductor (LED chip) industry and of the traditional electrical light sources and luminaires.

As this document has been simultaneously developed and edited with the standard for LED modules (IEC 62717), where appropriate, the compliance of the LED modules with the provisions of IEC 62717 can be transferred to the whole luminaire.

# LUMINAIRE PERFORMANCE –

# Part 2-1: Particular requirements – LED luminaires

## 1 Scope

This part of IEC 62722 specifies the performance requirements for LED luminaires, together with the test methods and conditions. It applies to LED luminaires for general lighting purposes.

Semi-luminaires are not covered under the scope of this document.

For some types of luminaires (e.g. decorative or household) the provision of performance data under the scope of this document is not appropriate.

In this document, the following types of LED luminaires are distinguished.

– Type A – Luminaires using LED modules where compliance with IEC 62717 is given.
– Type B – Luminaires using LED modules where compliance with IEC 62717 is not given.

Luminaires using an LED lamp are covered in IEC 62722-1 and are not within the scope of this document.

The requirements of this document relate to type testing.

This document covers LED luminaires using LED modules, based on inorganic LED technology that produces white light. It does not cover luminaires using light sources based on OLED technology (organic LED technology).

The lifetime of LED luminaires is in most cases much longer than the practical test times. Consequently, the verification of manufacturer's lifetime claims is out of the scope of this document.

Instead of lifetime validation, this document has opted for lumen maintenance categories at a defined finite test time. Therefore, the category number does not imply a prediction of achievable lifetime. The categories are lumen-depreciation character categories showing behaviour in agreement with the manufacturer's information which is provided before the test is started.

## 2 Normative references

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IEC 60598-2-3:2002, *Luminaires – Part 2-3: Particular requirements – Luminaires for road and street lighting*

IEC 60598-2-5:2015, *Luminaires – Part 2-5: Particular requirements – Floodlights*

IEC 62031:2018, *LED modules for general lighting – Safety specifications*

IEC 62717:2014, *LED modules for general lighting – Performance requirements*
IEC 62717:2014/AMD1:2015
IEC 62717:2014/AMD2:2019

IEC 62722-1, *Luminaire performance – Part 1: General requirements*