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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Luminaire performance – Part 1: General requirements

Performance des luminaires – Partie 1: Exigences générales

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Performance des luminaires – Partie 1: Exigences générales

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CONTENTS

FOREWORD ... 3
INTRODUCTION ... 5
1 Scope ... 6
2 Normative references ... 6
3 Terms and definitions ... 7
4 General requirements ... 8
5 Light sources and components of luminaires ... 8
6 Photometric data ... 8
7 Electrical data ... 9
8 Luminaire efficacy data ... 9
9 Environmental data ... 10
9.1 Materials information ... 10
9.2 Maintenance instructions ... 10
9.3 Disassembly instructions ... 10
Annex A (informative) Use of regional standards ... 11
Annex B (normative) Measurement method of total power of luminaires and associated powers ... 12
B.1 General ... 12
B.2 Test measurement of luminaire power during normal operation ... 12
B.3 Standard test conditions ... 12
B.4 Electrical measuring instruments ... 12
B.5 Test luminaires ... 12
B.6 Test voltage ... 12
B.7 Luminaire power ... 13
B.8 Luminaire standby power with lamps off ... 13
B.9 Emergency lighting charging power ... 13
Annex C (informative) Pictograms to assist the communication of instructions for maintenance through life and end of life recycling ... 14
C.1 General ... 14
C.2 Instructions for luminaire servicing (see Figure C.1) ... 14
C.3 Instructions for luminaire cleaning (see Figure C.2) ... 14
C.4 Instructions for luminaire disposal (see Figure C.3) ... 14
Annex D (normative) Photometric distribution data for luminaires ... 15
D.1 General ... 15
D.2 Measurement resolution of photometric distribution data ... 15
D.3 Method of comparison and acceptable limits of variation ... 15
Bibliography ... 18

Figure C.1 – Instructions for luminaire servicing ... 14
Figure C.2 – Instructions for luminaire cleaning ... 14
Figure C.3 – Instructions for luminaire disposal ... 14

Table D.1 – Some examples of nearest values to be selected for comparison ... 16

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LUMINAIRE PERFORMANCE –

Part 1: General requirements

FOREWORD

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International Standard IEC 62722-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

This first edition cancels and replaces IEC PAS 62722-1 published in 2011 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC PAS 62722-1.

a) The inclusion of more precise requirements for the comparison of the photometric distribution shape, with the comparison method given in Annex D.
b) Further regional standards added to the schedule given in Annex A

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

FDIS	Report on voting
34D/1132/FDIS	34D/1141/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.

A list of all the 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 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
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INTRODUCTION

The first edition of a performance standard for luminaires (general requirements) acknowledges the need for defining performance data to be provided, the presentation of this data, the basis of its measurement, and the associated tolerances that may be reasonably expected. Information to support responsible environmental use is also included. Part 2 of the IEC 62722-2 series will be introduced where additional performance requirements for specific types of light source are required.

The provisions in this standard represent the technical knowledge of experts from the fields of the luminaire industry and associated components such as lamps and controlgear.

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LUMINAIRE PERFORMANCE –

Part 1: General requirements

1 Scope

This part of IEC 62722 covers specific performance and environmental requirements for luminaires, incorporating electric light sources for operation from supply voltages up to 1 000 V. Unless otherwise detailed, performance data covered under the scope of this standard are for the luminaires in a condition representative of new manufacture, with any specified initial aging procedures completed.

IEC 62722-1 covers requirements for luminaires to support energy efficient use and responsible environmental management to the end of life. The object of this Part 1 is to provide a set of requirements which are considered to be generally applicable to most types of luminaires. Where additional performance requirements for specific types of light source are relevant, these are specified in the IEC 62722-2 series. The IEC 62722-2 series may also cover a wider scope of performance aspects appropriate to the particular light source technology.

NOTE The structure of these performance standards also allows for the possibility of Part 3 standards to be introduced in the future should standardisation of performance criteria linked to specific luminaire applications be determined as necessary (e.g. floodlighting, street lighting, etc.).

It is the intention that the requirements of this Part 1 are to be met by the provision of information and data provided by the luminaire manufacturer (or responsible vendor). Conformity is considered to be met by the provision of the requested information. Any verification of data is to be conducted by the measurement requirements of this standard.

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

For some types of luminaire (e.g. decorative/household) the provision of performance data under the scope of this standard may not be appropriate.

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

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

IEC 60598-2-22, *Luminaires – Part 2-22: Particular requirements – Luminaires for emergency lighting*

IEC 62722-2 (all parts), *Luminaire performance – Part 2: Particular requirements*

CIE 34:1977, *Road lighting lantern and installation data: Photometrics, classification and performance*

CIE 43:1979, *Photometry of floodlights*

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CIE 121:1996, *The photometry and goniophotometry of luminaires*

CIE 121-SP1:2009, *The photometry and goniophotometry of luminaires – Supplement 1: Luminaires for emergency lighting*

NOTE Annex A provides details of regional standards the use of which are preferred in some countries.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in the IEC 60598-1 as well as the following apply.

3.1
input power
electrical power from the mains supply consumed by the luminaire including the operation of all electrical components necessary for its intended functioning

3.2
standby power
electrical power from the mains supply consumed by the luminaire under normal operating conditions, with the lamps switched off via a control signal

Note 1 to entry: Standby power is expressed in watts.

Note 2 to entry: For emergency lighting luminaires this does not include the emergency lighting charging power.

3.3
emergency lighting charging power
electrical power from the mains supply consumed by the charging circuit of emergency luminaires to keep the battery charged

Note 1 to entry: Emergency lighting charging power is expressed in watts.

3.4
luminaire efficacy
ratio of the luminaires total luminous flux versus its input power at rated supply voltage, excluding any emergency lighting charging power

Note 1 to entry: Luminaire efficacy is expressed in lumens per watt.

3.5
light output ratio <of a luminaire>
LOR
ratio of the total luminous flux of the luminaire, measured under specified practical conditions with its own light sources and equipment, to the sum of the individual luminous fluxes of the same light sources when operated outside the luminaire with the same equipment, under specified conditions

Note 1 to entry: This note applies to the French language only.

3.6
rated value
quantitative value for a characteristic of a luminaire for specific operating conditions specified in this standard, or in applicable standards, or assigned by the manufacturer or responsible vendor

3.7
test voltage
voltage at which tests are carried out

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3.8
BLF
ballast lumen factor
ratio of the luminous flux of the light source when the ballast under test is operated at its rated voltage, to the luminous flux of the same lamp operated with the appropriate reference ballast supplied at its rated voltage and frequency

4 General requirements

4.1 Luminaires shall be tested complete with the light source and controlgear specified by the manufacturer. Except where otherwise specified, the luminaire, light source and controlgear shall be tested as new, and installed as for normal use, having regard to the manufacturer's installation instructions.

4.2 Luminaires shall meet the requirements of the IEC 60598-2 series standards that are appropriate to their design.

4.3 Luminaires shall meet all requirements of this Part 1 and where applicable also the additional requirements of the IEC 62772-2 series appropriate to the type of light source used by the luminaire. Where detailed in the IEC 62772-2 series, alternative methods of measurement or limits to those given in this Part 1 may be specified.

4.4 Where it is specified by this standard that data is to be provided, this data may be supplied by the manufacturer in printed or electronic formats, via the manufacturer's catalogues, website, or similar, unless otherwise specified by this standard.

4.5 Luminaires for tungsten filament lamps may be photometrically rated, electrically rated and efficacy-rated with lamps of any wattage not exceeding the marked maximum, and any technology (e.g. halogen, self-ballasted compact fluorescent or self-ballasted LED), if these lamps are covered by an available IEC safety standard and are shown to comply with that standard. For these luminaires, the number of lamps, their technology and their wattage shall be given in the luminaire manufacturer's catalogue, website or similar.

The use of an ILCOS code according to IEC 61231 is recommended. Further details may be necessary to identify the type of lamp.

4.6 The luminaire manufacturer shall be prepared to provide information for the specific light source used for the test.

5 Light sources and components of luminaires

Any light sources and components delivered with the luminaire shall comply with the requirements of the IEC performance standards that are appropriate to them.

6 Photometric data

Photometric data shall be available for the luminaire and any optical attachments or accessories that the luminaire has been specified for use with. The following photometric data shall be provided.

a) Light output ratio (LOR) or the total luminous flux of the luminaire

NOTE 1 The relevant standard of the IEC 62722-2 series can specify which of these are to be provided.

b) Luminous intensity distribution

Photometric data shall be provided for luminaires in accordance with an established international or regional format as appropriate for the type of luminaire and with luminous

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intensity distribution data according to the luminaire's intended application. Data shall be available in electronic file format to facilitate its use by lighting design software.

NOTE 2 Information regarding acceptable regional standards for photometric data formats is given in Annex A.

When LOR is provided it shall be measured in accordance with CIE 121 and the light output ratio (LOR) of the luminaire shall not be more than 10 % (relative) below the rated value.

When a total luminous flux is provided it shall be measured in accordance with CIE 121 and shall not be more than 10 % below the rated value.

The distribution of luminous intensity, measured in accordance with CIE 121, shall generally be in accordance with that declared by the manufacturer. The method of comparison for the distribution shape, and limits for acceptance are given in Annex D.

The allowed photometric variations detailed are to take account of manufacturing tolerances. When measurements are made, additional allowance for laboratory measurement uncertainty also needs to be considered.

All photometric data shall be declared for the luminaire operating at its rated supply voltage.

For the photometric performance and measurement of emergency luminaires when operating in emergency mode, see also IEC 60598-2-22 and CIE 121-SP1.

7 Electrical data

Electrical supply data shall be provided for the luminaire and shall include the following:

a) rated supply voltage;

b) rated input power;

c) rated standby power;

d) rated emergency lighting charging power.

Rated power values shall be rounded to the nearest whole number for 10 W and above and shall be to two significant figures when below 10 W.

When measured at its rated supply voltage, under conditions specified by Annex B, the electrical values shall not exceed the rated values declared by the manufacturer by more than 10 %.

8 Luminaire efficacy data

Where luminaire efficacy data is provided this shall be with reference to rated light source performance data published by the light source manufacturer. The luminaire manufacturer shall be prepared to provide information of the specific light source data that has been used.

Luminaire efficacy data shall be based on the rated photometric and electrical characteristics of the luminaire. For production light source and luminaire combinations, variation in accordance with parameters stated in IEC standards for light sources, controlgear, and luminaire standards may occur.

NOTE Luminaire efficacy data can be derived from LOR × (Rated light source lumens × BLF)/Input power watts at rated supply voltage.

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9 Environmental data

9.1 Materials information

The manufacturer shall ensure that materials used for the construction of the luminaire and its components are not in breach of local regulations restricting the use of specific substances considered to be hazardous to the user or environment.

NOTE Local regulations are those in force for the region of manufacture, sale and use of the luminaire.

9.2 Maintenance instructions

To assist good performance through life, the manufacturer shall provide details of the recommended maintenance operations that should be carried out.

NOTE In some countries, this information is required under the scope of local regulations.

9.3 Disassembly instructions

To assist end of life recycling, the manufacturer shall provide instructions to assist the disassembly of the luminaire and segregation of material types.

NOTE 1 In some countries, this information is required under the scope of local regulations.

NOTE 2 Symbols to assist the communication of instructions for maintenance through life and end of life recycling are given in Annex C.

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