ICS 17.180.20, 29.140.99 SLOVENSKÁ TECHNICKÁ NORMA December 2019

STN	**Svetlo a osvetlenie Meranie a vyhodnotenie fotometrických údajov svetelných zdrojov a svetiel Časť 4: Svetelné diódy, LED moduly a svietidlá**	**STN EN 13032-4+A1 36 0401**

Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 4: LED lamps, modules and luminaires

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. 11/19

Obsahuje: EN 13032-4:2015+A1:2019

Oznámením tejto normy sa ruší
STN EN 13032-4 (36 0401) z januára 2017

129557

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13032-4:2015+A1

June 2019

ICS 17.180.20; 29.140.99 Supersedes EN 13032-4:2015

English Version

Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 4: LED lamps, modules and luminaires

Lumière et éclairage - Mesure et présentation des données photométriques des lampes et des luminaires - Partie 4 : Lampes, modules et luminaires LED

Licht und Beleuchtung - Messung und Darstellung photometrischer Daten von Lampen und Leuchten - Teil 4: LED-Lampen, -Module und -Leuchten

This European Standard was approved by CEN on 19 March 2015 and includes Amendment 1 approved by CEN on 21 March 2019.

CEN 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 CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. EN 13032-4:2015+A1:2019 E

Contents

Page

European foreword

This document (EN 13032-4:2015+A1:2019) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.

〈A1〉 This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association (M/495 and M/519), and supports essential requirements of EU Directive(s): No 244/2009, No 874/2012, No 1194/2012 and No 2015/1428 amending 244/2009.

For relationship with EU Directive(s), see informative Annexes ZA, ZB and ZC, which is an integral part of this document. 〈A1〉

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

This document includes Amendment 1 approved by CEN on 21 March 2019.

This document supersedes EN 13032-4:2015.

The start and finish of text introduced or altered by amendment is indicated in the text by tags 〈A1〉 〈A1〉 .

This standard was developed in collaboration with CIE TC2.71, which developed CIE S 025, to produce two technically-harmonized standards at CEN and CIE level.

Acknowledgement is given to CIE for their support in the preparation of this standard.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This standard provides requirements to perform reproducible photometric and colorimetric measurements on LED lamps, LED modules and LED luminaires (LED devices). It also provides advice for the reporting of the data.

The availability of reliable and accurate photometric data for LED devices is a basic requirement for designing good lighting systems and evaluating performance of products. By obtaining these data through measurements in specific normalized measuring conditions the consistency of the data should be ensured between different laboratories (within the limits of the declared measurement uncertainty) and comparison of different products on the same basis is possible.

This standard aims in particular to cover measurement methods for testing the compliance of LED devices with the photometric and colorimetric requirements of LED performance standards (see Clause 2) issued by IEC/TC 34/CLC/TC 34 “Lamps and related equipment” and/or relevant European regulations.

LED devices offer a large variety of configurations in respect to geometry and/or colour. For each configuration the photometric and colorimetric performances are considered individually.

1 Scope

This European Standard specifies the requirements for measurement of electrical, photometric, and colorimetric quantities of LED lamps, LED modules and LED luminaires, for operation with AC or DC supply voltages, possibly with associated LED control gear. LED light engines are assimilated to LED modules and handled accordingly. Photometric and colorimetric quantities covered in this standard include total luminous flux, luminous efficacy, partial luminous flux, luminous intensity distribution, centre-beam intensity, luminance and luminance distribution, chromaticity coordinates, correlated colour temperature (CCT), colour rendering index (CRI), and angular colour uniformity.

〉A1〈 This document does not cover LED packages. Described measurement methods for LED lamp or luminaires may apply as measurement methods for OLEDs products. 〈A1〉

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.

EN ISO 11664-1:2011, *Colorimetry — Part 1: CIE standard colorimetric observers (ISO 11664-1:2007)*

EN ISO 11664-2:2011, *Colorimetry — Part 2: CIE standard illuminants (ISO 11664-2:2007)*

EN ISO 11664-3:2013, *Colorimetry — Part 3: CIE tristimulus values (ISO 11664-3:2012)*

EN 12665, *Light and lighting — Basic terms and criteria for specifying lighting requirements*

EN 13032-1:2004+A1:2012, *Light and lighting — Measurement and presentation of photometric data of lamps and luminaires — Part 1: Measurement and file format*

EN 61341:2011, *Method of measurement of centre beam intensity and beam angle(s) of reflector lamps (IEC/TR 61341:2010)*

EN 62504:2014, *General lighting — Light emitting diode products and related equipment— Terms and definitions (IEC 62504:2014)*

〉A1〈 EN 62717:2017, *LED modules for general lighting — Performance requirements (IEC 62717:2014, modified + A1:2015, modified)* 〈A1〉

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 98-4:2012, *Uncertainty of measurement — Part 4: Role of measurement uncertainty in conformity assessment*

ISO/IEC Guide 99:2007, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

CIE/DIS 024/E:2013, *Light Emitting Diodes (LEDs) and LED Assemblies — Terms and Definitions*

CIE 13.3, *Method of Measuring and Specifying Colour Rendering of Light Sources*

CIE 15, *Colorimetry*

CIE 84:1989, *Measurement of Luminous Flux*

CIE 198:2011, *Determination of Measurement Uncertainties in Photometry*

CIE 198:2011-SP1, Determination of Measurement Uncertainties in Photometry – Supplement 1: Modules and Examples for the Determination of Measurement Uncertainties