SLOVENSKI STANDARD

oSIST prEN 13272-2:2017

01-november-2017

Železniške naprave - Električna razsvetljava v železniških vozilih za javne prevozne sisteme - 2. del: Urbani železniški sistemi

Railway applications - Electrical lighting for rolling stock in public transport systems - Part 2: Urban rail systems

Bahnanwendungen - Elektrische Beleuchtung in Schienenfahrzeugen des öffentlichen Verkehrs - Teil 2: Schienennahverkehrssysteme

Applications ferroviaires - Éclairage électrique pour matériel roulant des systèmes de transport public - Partie 2 : Systèmes du rail urbain

Ta slovenski standard je istoveten z: prEN 13272-2

ICS:

45.140	Oprema za podzemne vlake, tramvaje in lahka tirna vozila	Metro, tram and light rail equipment
91.160.10	Notranja razsvetljava	Interior lighting

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EUROPEAN STANDARD

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ICS 45.140; 91.160.10

Will supersede EN 13272:2012 (PART)

English Version

Railway applications - Electrical lighting for rolling stock in public transport systems - Part 2: Urban rail systems

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 13272-2:2017) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document, together with prEN 13272-1, will supersede EN 13272:2012.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This series of documents Railway applications — Electrical lighting for rolling stock in public transport systems consists of the following parts:

— Part 1: *Mainline rail*;

— Part 2: *Urban rail* (this document).

Introduction

This European Standard sets out the requirements for interior lighting for urban rail vehicles, as defined in the CEN-CENELEC Guide 26.

1 Scope

This European Standard contains performance requirements and recommendations for electrical lighting systems in the interiors of public transport urban rail vehicles, as defined in the CEN-CENELEC Guide 26, i.e. Metro Systems, Trams, Light Rail, and Local Rail Systems, under all operating and emergency conditions.

This European Standard also defines the requirements for testing and conformity assessment.

This European Standard does not address lighting installed in instruments or controls.

This European Standard does not address lighting installed for indication purposes, including flashing lights and effect lighting.

NOTE 1 The requirements for interior lighting for trains can be found in prEN 13272–1

NOTE 2 The requirements for cab instrument lighting can be found in EN 16186–2.

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.

prEN 13272-1:2017, *Railway applications — Electrical lighting for rolling stock - Part 1 Mainline rail*

IEC 60050-845:1987,[1] *International Electrotechnical Vocabulary Chapter 845: Lighting*

EN 62031, *LED modules for general lighting - Safety specifications (IEC 62031)*

EN 62471 *Photobiological safety of lamps and lamp systems (IEC 62471)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General

3.1.1
Urban guided transport system
UGT system
system covering metro, tram and light rail, and are defined as public transport systems permanently guided at least by one rail, intended for the operation of local, urban and suburban passenger services with self-propelled vehicles and operated either segregated or not from general road and pedestrian traffic

[1] IEC 60050-845:1987 is identical to CIE Publication No. 17.4.

3.1.2
metro system
UGT system operated on its own right of way and segregated from general road and pedestrian traffic; consequently designed for operations in tunnels, viaducts or on surface level but with physical separation in such a way that inadvertent access is not possible

Note 1 to entry: In different parts of the world, Metro systems are also known as the underground, the subway or the tube. Rail systems with specific construction issues operating on a segregated guideway (e.g. monorail, rack railways) are also treated as Metros as long as they are designated as part of the urban public transport network.

3.1.3
tram
UGT systems not segregated from general road and pedestrian traffic, which share their right of way with general road and/or pedestrian traffic and are therefore embedded in their relevant national road traffic legislation (highway codes and specific adaptations)

3.1.4
light rail
UGT system operated in parts of the system not segregated from general road and pedestrian traffic, and in parts of the system with segregated right-of-way

Note 1 to entry: The segregation may include some sections of line where inadvertent access is not possible.

3.1.5
local rail system
system connecting city centres with their suburban hinterland or regional local centres, operated on rights of way which are basically segregated from general road and/or pedestrian traffic and/or which can be declared by law as independent from the public environment even if they are not segregated by location, form of construction or appropriate measures

Note 1 to entry: Local rail systems, by national decision complying with Article 1.3 (a) or (b) of Directive 2008/57/EC, may be excluded from the European Community Rail System. Such

Note 2 to entry: For historical reasons they might be strongly influenced by conventional railway parameters and their operations procedures.

3.1.6
vehicle
complete assembly of one or more cars

3.1.7
passenger area
area designed for passenger use

3.1.8
service area
area which are intended to be occupied by service personnel only

3.1.9
seating area
passenger area intended for seated persons, including wheelchair spaces

3.1.10
standing area
passenger area intended for standing persons

3.1.11
open gangway
wide gangway designed to be occupied by travelling passengers

Note 1 to entry: This excludes the gangways that are only to be used to pass from one vehicle to another.

3.1.12
vehicle access step
first fixed part of the floor threshold inside the vehicle

3.1.13
lamp
light source used for the creation of light in a luminaire

Note 1 to entry: Lamps include tungsten, halogen, fluorescent, electroluminescent, LED, OLED and laser diode technologies

3.1.14
luminaire
complete assembly comprising a lamp or lamps together with associated fittings for the control of light delivery

3.1.15
luminance
L
<in a given direction at a given point of surface> luminous intensity of the light emitted in a given direction from an element of the surface, divided by the area of the element projected in the same direction

Note 1 to entry: Unit: candela per square metre (cd/m^2).

Note 2 to entry: Adapted from EN 12665.

3.1.16
luminous flux
Φ
quantity derived from radiant flux (radiant power) by evaluating the radiation according to the spectral sensitivity of the human eye (as defined by the CIE standard photometric observer)

Note 1 to entry: Unit: lumen (lm).

Note 2 to entry: It is the light power emitted by a source.

Note 3 to entry: Adapted from EN 12665.

3.1.17
Illuminance
E
ratio of the luminous flux incident on a surface to the area of the illuminated surface

Note 1 to entry:Unit: lux (lx) = lm/m^2

Note 2 to entry: Illuminance was previously known as the illumination level or value.

Note 3 to entry: The orientation of the surface may be defined, e.g. horizontal, vertical.

3.1.18
average illuminance
E_{av}
illuminance averaged over the specified surface

Note 1 to entry: Unit: lux (lx).

Note 2 to entry: Adapted from EN 12665.

Note 3 to entry: In practice this may be derived either from the total luminous flux falling on the surface divided by the total area of the surface, or alternatively from an arithmetic average of the illuminances at a representative number of points on the surface.

3.1.19
illuminance uniformity
ratio of the least favourable illuminance to the average illuminance within the specified measurement surface

Note 1 to entry: The least favourable illuminance may be either the minimum or maximum illuminance over all the measurement points.

3.1.20
correlated colour temperature
T_{cp}
CCT
<of a light source> temperature of a Planckian radiator whose perceived colour most closely resembles that of the given stimulus at the same brightness and under specified viewing conditions

Note 1 to entry: Unit: Kelvin (K)

Note 2 to entry: Adapted from EN 12665.

3.1.21
colour rendering
effect of an illuminant on the reflective colour of objects by comparison with their reflective colour under a reference light source

Note 1 to entry: Adapted from IEC 60050–845–02–59.

3.1.22
light loss factor
ratio of the average illuminance of the illuminated surface after a certain period of use of a lighting installation to the average illuminance obtained under the same conditions for the installation considered conventionally as new

Note 1 to entry: Adapted from IEC 60050–845–09–59.

3.1.23
SDCM
standard deviation colour matching
<of a light source> deviation defined in terms of just perceptible colour differences using 'MacAdam ellipses' as set out in the CIE 1964 standard

Note 1 to entry: The SDCM scale runs from 0 to 10, where 1-3 normally covers environments with high demands on colour matching.

3.1.24
contractor
organization responsible for

— the design, manufacture or supply of the lighting system; and

— the purchase, installation or use of the lighting system

3.1.25
purchaser
organization responsible for the purchase of the lighting system

3.2 Types of lighting

3.2.1
general lighting
lighting of an interior provided for normal operation

3.2.2
emergency lighting
lighting provided for a specified minimum time limit when the general lighting fails

4 Requirements for lighting in passenger areas

4.1 General lighting

4.1.1 General

The quality of lighting influences visual performance, performance attitude, safety at work and general well-being.

The lighting for rolling stock in urban rail systems shall enable the relevant visual tasks to be performed, e.g. it shall ensure passenger safety on board and during passenger transfer.

The requirements to be met by the lighting system are based on the following criteria:

— illuminance;

— uniformity;

— limitation of glare;

— colour temperature and colour rendering;

— photobiological safety.

General lighting shall achieve the values set out in Table 2.