

SVENSK STANDARD

SS-EN 15153-1:2020

**Järnvägar – Utvändiga optiska och akustiska larmanordningar
för fordon –**

Del 1: Strålkastare, positionsljus och slutsignaler

**Railway applications – External visible and audible warning
devices –**

Part 1: Head, marker and tail lamps for heavy rail



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Språk: engelska/English

Utgåva: 3

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Fastställd: 2020-01-21

ICS: 14.540;45.040;45.060.01;45.060.10;45.080

Europastandarden EN 15153-1:2020 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 15153-1:2020.

Denna standard ersätter SS-EN 15153-1:2013+A1:2016, utgåva 1.

The European Standard EN 15153-1:2020 has the status of a Swedish Standard. This document contains the official version of EN 15153-1:2020.

This standard supersedes the SS-EN 15153-1:2013+A1:2016, edition 1.

EUROPEAN STANDARD

EN 15153-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2020

ICS 45.060.10

Supersedes EN 15153-1:2013+A1:2016

English Version

Railway applications - External visible and audible warning devices - Part 1: Head, marker and tail lamps for heavy rail

Applications ferroviaires - Dispositifs externes d'avertissement optiques et acoustiques - Partie 1 : Feux avant, feux de position et feux arrière pour systèmes ferroviaires lourds

Bahnanwendungen - Äußere optische und akustische Warneinrichtungen - Teil 1: Leuchten für Fernlichter, Spitzen- und Schlussignale für Vollbahnen

This European Standard was approved by CEN on 6 October 2019.

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SS-EN 15153-1:2020 (E)

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European foreword

This document (EN 15153-1:2020) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, 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of an identical text or by endorsement, at the latest by July 2020, and conflicting national standards shall be withdrawn at the latest by July 2020.

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 supersedes EN 15153-1:2013+A1:2016.

The main changes with respect to the previous edition are:

- clarification of scope,
- revised alignment of head lamps according to the ‘alternative method’,
- clarification of the criteria for assessing the lit area of lamps,
- new Annex A, containing a summary of items for agreement between contractors, and
- re-working of the summary of testing requirements (now Annex B) to permit inspection of drawings / design documents, and to mandate the testing of interoperability constituents.

This series of documents *Railway applications — External visible and audible warning devices* consists of the following parts:

- Part 1: *Head, marker and tail lamps for heavy rail* (this document);
- Part 2: *Warning horns for heavy rail*;
- Part 3: *Visible warning devices for urban rail*;
- Part 4: *Audible warning devices for urban rail*.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2016/797/EC.

For relationship with EU Directive 2016/797/EC, see informative Annex ZA which is an integral part of this document.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

This document was produced following the creation of EN 15153-3 for urban rail.

This document was re-named to make a clear distinction between heavy rail and urban rail.

Additionally, Annex ZA was updated for the current status of TSIs.

1 Scope

This document defines the functional and technical requirements for head, marker and tail lamps for heavy rail units, excluding road, metro and self-contained systems.

This document also defines the requirements for testing and conformity assessment.

Lamps designed for special purposes, for example illumination of third rail, are excluded from the scope of this document.

Portable lamps are excluded from the scope of this document.

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.

EN 16186-2:2017, *Railway applications - Driver's cab - Part 2: Integration of displays, controls and indicators*

EN ISO/CIE 11664-1:2019, *Colorimetry — Part 1: CIE standard colorimetric observers*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

NOTE For general railway terms and definitions, refer to EN 17343¹.

3.1

heavy rail systems

see EN 17343¹

3.2

head lamp

device fitted to the front of the train that emits white light, intended to provide visual warning of an approaching train, and/or to illuminate the line and lineside

3.3

marker lamp

device fitted to the front of the train that emits white light, intended to indicate the presence of a train, to provide visual warning of an approaching train and/or to illuminate retro-reflective lineside signs

Note 1 to entry: The front end signal light (detectability) as set out in TSI OPE comprises three marker lamps.

¹ Under preparation. Stage at the time of publication: prEN 17343.

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3.4

tail lamp

device fitted to the rear of the train that emits red light, intended to indicate the presence of a train, and to indicate the end of the complete train formation

Note 1 to entry: The rear end signal light as set out in TSI OPE comprises two tail lamps.

3.5

combined lamp

device capable of different functions, for example head, marker and tail lamp, or any combination of these

3.6

light source

system for generating light in a lamp

3.7

CIE (1931) standard colorimetric system (x, y, z)

system for specifying colour by determining the tristimulus values of the spectral power distribution of a coloured light using the set of reference colour stimuli [X], [Y], [Z] and the three CIE colour matching functions $x(\lambda)$, $y(\lambda)$, $z(\lambda)$, adopted by the CIE in 1931

Note 1 to entry For more information see CIE 15.

3.8

optical axis of lamp

axis defined by the manufacturer against which the luminous intensity requirements are assessed

3.9

centre-line of rails

line parallel and equidistant to the rails

Note 1 to entry: This definition was derived from EN 13232-1:2003, with modifications.

3.10

lit area

active optical area of a lamp projected onto a plane perpendicular to the optical axis

3.11

contractor

organizations responsible for

- the design, manufacture or supply of the lamp (may also be referred to as the 'supplier'); and
- the purchase, installation or use of the lamp (may also be referred to as the 'customer').

4 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

cd	Candela, the SI unit for luminous intensity
CIE	International Commission on Illumination

RST	Rolling Stock
TSI	Technical Specification for Interoperability relating to the rolling stock subsystem of the trans-european rail system network

5 Requirements

5.1 General

The provision of lamps is specified in 5.2.

The technical requirements for head, marker and tail lamps are set out in 5.3, 5.4 and 5.5 (respectively).

The testing requirements are set out in Clause 6 and Annex B.

It should be noted that certain lighting technology degrades throughout its service life. It is important to ensure that the requirements in this document are maintained.

5.2 Provision of lamps

A minimum of two white head lamps shall be installed at the front of the train.

Additionally, where agreed between contractors, a maximum of two upper head lamps may be installed.

Three white marker lamps shall be installed at the front of the train.

Two red tail lamps shall be installed at the rear of the train.

Where agreed between contractors, additional tail lamp(s) and marker lamp(s) with special warning or signalling functions may be installed, provided that they comply with the prescribed optical requirements and that they do not adversely affect the parameters given in this document.

Combined lamps (i.e. lamps capable of different functions) are permissible, provided that the requirements for individual lamp functions are achieved.

All lamps at intermediate locations of the train shall be unlit.

5.3 Head lamps

5.3.1 Positioning of head lamps

The two head lamps shall both be located at the same height, with their geometric centres between 1 500 mm and 2 000 mm above the top of rail.

NOTE Where upper head lamps are fitted, this requirement applies only to the lower head lamps.

The arrangement of the two head lamps shall be such that the distance between their geometric centres is not less than 1 000 mm and that the head lamp geometric centres are symmetrical about the centre-line of rails.

Where upper head lamps are installed, these shall be located as close to the vehicle centre line as possible.

The vertical separation between the geometric centres of all upper lamp(s) and all lower lamps shall be equal to or greater than 600 mm.

5.3.2 Dimensions of head lamps

Each head lamp shall have a maximum lit area of 33 400 mm², and a minimum lit area of 17 650 mm².