



BSI Standards Publication

Railway applications - Driver's cab

Part 3: Design of displays

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National foreword

This British Standard is the UK implementation of EN 16186-3:2016+A1:2018. It supersedes BS EN 16186-3:2016, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee RAE/4/-/4, Railway Applications - Driver's Cab.

A list of organizations represented on this committee can be obtained on request to its secretary.

The UK committee draws users' attention to the distinction between normative and informative elements, as defined in Clause 3 of the CEN/CENELEC Internal Regulations, Part 3.

Normative: Requirements conveying criteria to be fulfilled if compliance with the document is to be claimed and from which no deviation is permitted.

Informative: Information intended to assist the understanding or use of the document. Informative annexes do not contain requirements, except as optional requirements, and are not mandatory. For example, a test method may contain requirements, but there is no need to comply with these requirements to claim compliance with the standard.

When speeds in km/h require unit conversion for use in the UK, users are advised to use equivalent values rounded to the nearest whole number. The use of absolute values for converted units should be avoided in these cases. Please refer to the table below for agreed conversion figures:

INS, RST and ENE speed conversions	
km/h	mph
5	3
10	5
20	10
30	20
80	50
160	100
190	120

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2018

ISBN 978 0 580 96409 1

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ICS 45.060.10

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2018.

Amendments/corrigenda issued since publication

Date	Text affected
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EUROPÄISCHE NORM

December 2018

ICS 45.060.10

Supersedes EN 16186-3:2016

English Version

Railway applications - Driver's cab - Part 3: Design of displays

Applications ferroviaires - Cabine de conduite - Partie
3: Conception des affichages

Bahnanwendungen - Führerraum - Teil 3: Gestaltung
von Führerraumanzeigen

This European Standard was approved by CEN on 12 June 2016 and includes Amendment 1 approved by CEN on 26 August 2018.

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.

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

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

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European foreword

This document (EN 16186-3:2016+A1:2018) 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 2018-08-26.

This document supersedes EN 16186-3:2016.

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

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 2008/57/EC [1].

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

EN 16186, Railway applications — Driver's cab is written as an EN series on all the aspects to be considered when designing a driver's cab, from anthropometric data and visibility, over the integration of displays, controls and indicators as well as the design of displays to cab layout and access facilities. The background information on the anthropometric data used is provided in CEN/TR 16823 [2].

EN 16186, *Railway applications — Driver's cab* currently consists of the following parts:

- Part 1: Anthropometric data and visibility;
- Part 2: Integration of displays, controls and indicators;
- Part 3: Design of displays;
- A1 Part 4: Layout and access. A1

A1 Deleted text A1

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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.

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Introduction

The requirements of this standard, which interface with vehicle functions, have been elaborated with the commitment to respect the standards specifying these functions and in addition to respect the state of the art of other rolling stock functions.

For tracing of requirements a link to CLC/TS 50459 series [3] or the ERA DMI document [4] serving as a source for the related requirements is added.

The reasons for defining the information are as follows:

- achieving harmonized and coherent presentation of information;
- defining Driver-Machine Interface ergonomics that is compatible with agreed interoperable specifications;
- to reduce the risk of incorrect operation by a driver working with different trains fitted with displays;
- facilitating train operation with unified ergonomics, hence reducing the cost of driver training.

Information designed according to this standard is deemed to fulfil the following basic principles:

- be clear, correct and necessary;
- indicate its priority, whether by positioning, size, colour, sounds, sound levels, etc.;
- minimize confusion of the driver;
- prevent unnecessary distraction of the drivers' attention while performing their normal duties.

If a requirement contains an option, the choice of this option is purely up to the applicant.

NOTE The term "option" is to be understood as a possibility that is usually expressed by the word "can".

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1 Scope

This European Standard specifies all necessary design rules and associated assessment criteria as well as guidance concerning the design of information and the corresponding user interfaces of driver's cabs of EMU, DMU, Railcars, Locomotives and Driving trailers.

NOTE 1 This standard applies to rolling stock in the scope of the Directive 2008/57/EC.

It considers the tasks the driver has to carry out and human factors. This standard specifies how information is arranged and displayed. It is explicitly applicable to display applications like TRD, ETD, CCD and TDD and may be completed by the CLC/TS 50459 series.

This standard is not applicable to legacy ATP systems. If requirements in this standard are in conflict with the ERA DMI document (ERA_ERTMS_015560) the requirements of the ERA DMI document should prevail for the CCD ETCS application.

NOTE 2 For resolving any discrepancies (e.g. 5.4.2.3) ERA is expected to harmonize the usage philosophy of the ERA DMI with this standard.

All assessments based on the normative requirements of this standard are applicable mainly to

- symbols provided by Annex A,
- arrangement of screen areas conform with Figure 1 (generic organization of information),
- colours, fonts,
- audible information.

This standard is applicable to the following aspects:

- legibility and intelligibility of displayed information: general rules concerning the layout of information on the displays, including character size and spacing;
- definition of harmonized colours, symbols, etc.;
- definition of harmonized principles for the command interface (by physical or touchscreen buttons): size, symbols, reaction time, way to give feedback to the driver, etc.;
- general arrangements (dialogue structures, sequences, layout philosophy, colour philosophy), symbols, audible information, data entry arrangements.

NOTE 3 If this standard deals with how information can be given for operation and in degraded situations, it does not define operating rules and degraded situations.

This standard does not request any safety requirement related with displayed information.

This standard specifies minimum requirements and does not prevent more complex solutions.

Requirements describing the functions using the display are out of scope of this standard.

A1 This standard is not intended to be applicable for tramway, metros and light rail vehicles. **A1**