



BSI Standards Publication

Railway applications — Driver's cabs

Part 5: External visibility for tram vehicles

National foreword

This British Standard is the UK implementation of EN 16186-5:2021+A1:2023. It supersedes BS EN 16186-5:2021, which is withdrawn.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 committee manager.

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English Version

Railway applications - Driver's cabs - Part 5: External visibility for tram vehicles

Applications ferroviaires - Cabines de conduite - Partie
5 : Visibilité extérieure depuis la cabine de tramways

Bahnanwendungen - Führerraum - Teil 5:
Sichtbedingungen nach außen bei
Straßenbahnfahrzeugen

This European Standard was approved by CEN on 21 June 2021 and includes Amendment approved by CEN on 26 June 2023.

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Contents

European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Driver's anthropometric data.....	7
4.1 General.....	7
4.2 Data	7
5 Forward visibility.....	9
5.1 General.....	9
5.2 Forward visibility requirements.....	9
5.2.1 Objectives.....	9
5.2.2 General.....	9
5.2.3 Visibility of external signals.....	10
5.2.4 Close outside visibility	10
5.2.5 Forward visibility.....	12
5.2.6 Visibility of couplers	13
5.3 Windscreen and side windscreen related requirements	13
5.3.1 General.....	13
5.3.2 Front windscreen cleaning device	13
5.3.3 Windscreen glare protection	14
5.3.4 Front Windscreen de-icing and de-misting	15
5.3.5 Side Windscreen de-icing and de-misting.....	15
5.3.6 Reflection protection	15
6 External rear visibility	16
Annex A (normative) Forward visibility reference surfaces.....	17
Annex B (normative) Forward visibility reference eye points — Adjustable foot rest and adjustable seat	18
Annex C (informative) A-deviations	19
Bibliography	20

European foreword

This document (EN 16186-5:2021+A1:2023) 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 February 2024, and conflicting national standards shall be withdrawn at the latest by February 2024.

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 A1 EN 16186-5:2021 A1.

This document includes Amendment 1 approved by CEN on 26 June 2023.

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

EN 16186 *Railway applications — Driver’s cab* consists of the following parts:

- *Part 1: Anthropometric data and visibility;*
- *Part 2: Integration of displays, controls and indicators;*
- *Part 3: Design of displays;*
- *Part 4: Layout and access;*
- *Part 5: External visibility for tram vehicles;*
- *Part 6: Integration of displays, controls and indicators for tram vehicles¹;*
- *Part 7: Design of displays for tram vehicles¹;*
- *Part 8: Tram vehicle layout and access¹.*

NOTE Part 1 to 4 above-mentioned standard are only applicable for heavy rail vehicles.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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¹ Under development.

1 Scope

This document specifies the external front and rear visibility conditions from cabs of tram vehicles and the associated assessment method.

This document applies to vehicles operating on tram networks.

This document does not apply to driver's auxiliary desks.

A1 This document applies for tram-train vehicles operating on the tram and suburban networks. **A1**

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 15152:2019, *Railway applications - Windscreens for trains*

EN 15227, *Railway applications - Crashworthiness requirements for rail vehicles*

EN 15663, *Railway applications - Vehicle reference masses*

A1 EN 17343:2020, *Railway applications - General terms and definitions* **A1**

3 Terms and definitions

A1 For the purposes of this document, the terms and definitions given in EN 17343:2020 and the following apply. **A1**

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 <http://www.iso.org/obp>

3.1

auxiliary desk

<tram vehicle>

additional control desk with limited functionality generally located in the passenger area

3.2

windscreen

glazing in front of a driver through which the track ahead can be observed

[SOURCE: EN 15152:2019, 3.2, modified — “or passengers” is removed.]

3.3

sagittal plane

XZ plane passing in the middle of the dummy

Note 1 to entry: The XZ directions are defined in EN 15227.

3.4**side windscreen**

additional glazing positioned at the side of a windscreen that is predominately positioned transversely to the running direction

[SOURCE: EN 15152:2019, 3.2.2]

3.5**tram network**

urban rail network with its own right of way or shared with road traffic

Note 1 to entry:  Typically, on sight driving operation. 

Note 2 to entry: A tram network can be linked to other rail networks.

3.6**tram vehicle**

 rail vehicle operated with on sight driving and designed to run on a tram network

Note 1 to entry: An assembly of one or more coupled tram vehicles is usually called a tram. 

3.7**primary vision area**

area of the windscreen through which track and signals are visible from the driving position

Note 1 to entry: Defined as “vision area A” by EN 16186-1:2014+A1:2018, 3.1.3.

[SOURCE: EN 15152:2019, 3.3, modified — The current Note 1 to entry was added.]

3.8**secondary vision area**

area of the windscreen outside the primary vision area, through which the driver can also look from the driving position

Note 1 to entry: Defined as “vision area B” by EN 16186-1:2014+A1:2018, 3.1.4.

[SOURCE: EN 15152:2019, 3.4, modified — The current Note 1 to entry was added. “May” has been replaced with “can”]

3.9**driver dummies**

models referring to the min and max anthropometric data

Note 1 to entry: The anthropometric data are provided in Clause 4.



3.10**direct line of sight**

straight line between the observer and the object being observed unobstructed by any physical barrier that materially obstructs a view of the object being observed

3.11

indirect line of sight

line between the observer and the object being observed with the help of a device when a direct line of sight is not given

3.12

on sight driving operation

operating mode where a driver should be able to stop the vehicle before a reasonably visible stationary obstruction ahead from the intended speed of operation using the service brake

3.13

tram-train vehicle

rail vehicle designed to run on an urban rail network and a heavy rail network

Note 1 to entry: The present document applies for tram-train vehicles operating on the tram and suburban networks.

[SOURCE: EN 17343:2020, 3.1.6.1, modified, note 1 to entry added]

