



**NSAI**  
Standards

Irish Standard  
I.S. EN 16185-2:2014

# Railway applications - Braking systems of multiple unit trains - Part 2: Test methods

**I.S. EN 16185-2:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 16185-2:2014

*Published:*

2014-12-17

*This document was published under the authority of the NSAI and comes into effect on:*

2015-01-19

ICS number:

45.040

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

**EN 16185-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2014

---

ICS 45.040

English Version

## Railway applications - Braking systems of multiple unit trains - Part 2: Test methods

Applications ferroviaires - Systèmes de freinage pour trains  
automoteurs - Partie 2 : Méthodes d'essai

Bahnanwendungen - Bremssysteme für Triebzüge - Teil 2:  
Prüfverfahren

This European Standard was approved by CEN on 13 October 2014.

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, 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: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions .....	5
4 Symbols and abbreviations .....	6
5 Requirements .....	6
5.1 General.....	6
5.2 Test specification.....	7
5.2.1 General.....	7
5.2.2 Identification of the parts to be tested .....	7
5.2.3 General conditions for the tests.....	8
6 Static tests program .....	8
6.1 General.....	8
6.2 Reports .....	9
6.3 Documentation.....	9
6.4 Methodology (for type tests only).....	10
6.4.1 Measurement of the friction application force.....	10
6.4.2 Measurement of the delay time .....	10
6.4.3 Measurement of the application force build-up time .....	10
6.4.4 Measurement of the application force release time .....	10
6.4.5 Measurement of the brake response time.....	10
6.4.6 Measurement of the pressure drop time in the brake pipe or the equalising reservoir of the driver's brake valve .....	10
6.4.7 Measurement of the pressure rise time in the brake pipe or the equalising reservoir of the driver's brake valve .....	11
6.4.8 Measurement of the dead time of the WSP dump valves .....	11
6.4.9 Measurement of the exhaust time of the WSP dump valves.....	11
6.4.10 Measurement of the fill time of the WSP dump valves .....	11
6.4.11 Measurement of air tightness.....	11
6.4.12 Measurement of braking and release times of EP assist brake.....	11
6.4.13 Evaluation of the longitudinal brake force applied to the track by Magnetic Track Brake or Eddy Current Brake .....	11
6.5 Test schedule .....	13
7 Dynamic tests schedule .....	42
7.1 General for dynamic tests.....	42
7.1.1 Preconditions .....	42
7.1.2 Test conditions .....	42
7.1.3 Measured variables to be recorded .....	43
7.1.4 Verification of deceleration and stopping distance .....	44
7.1.5 Definition of braked weight percentage ( $\lambda$ ) .....	44
7.1.6 Measurement of the brake force contribution of the different brakes .....	45
7.2 Test program .....	46
Annex A (informative) Typical format for a test report for type or routine test .....	56
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC .....	57
Bibliography .....	59

## Foreword

This document (EN 16185-2:2014) 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 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

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

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.

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

This series of European Standards *Railway applications — Braking systems of multiple unit trains* consists of:

- *Part 1: Requirements and definitions;*
- *Part 2: Test methods.*

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## EN 16185-2:2014 (E)

### 1 Scope

This European Standard specifies test methods and acceptance criteria for a brake system for use in self-propelling thermal and electric trains, in the following document called EMU/DMU, operating on routes of the European conventional rail system network.

This European Standard is applicable to:

- all new vehicles designs of self-propelling thermal and electric trains;
- all major overhauls of the EMU/DMU if they involve redesigning or extensive alteration to the brake system of the vehicle concerned.

This European Standard does not cover:

- locomotive hauled trains which are specified by EN 14198;
- mass transit rolling stock which is specified by EN 13452 (all parts);
- high speed trains being operated at speeds greater than 200 km/h which are specified by EN 15734-1 and tests in EN 15734-2.

The functional testing requirements set out in this European Standard assume the vehicles are fitted with brake system architecture as defined in EN 16185-1.

The braking performance obtained by applying the tests defined in this European Standard can be used to assess compliance with the required braking performance as defined in EN 16185-1.

### 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 14478:2005, *Railway applications — Braking — Generic vocabulary*

EN 15595, *Railway applications — Braking — Wheel slide protection*

EN 15663, *Railway applications — Definition of vehicle reference masses*

EN 15734-2:2010<sup>1)</sup>, *Railway applications — Braking systems of high speed trains — Part 2: Test methods*

EN 16185-1:2014, *Railway applications — Braking systems of multiple unit trains — Part 1: Requirements and definitions*

EN 16207:2014, *Railway applications — Braking — Functional and performance criteria of Magnetic Track Brake systems for use in railway rolling stock*

EN 16334, *Railway applications — Passenger Alarm System — System requirements*

EN 50128, *Railway applications — Communication, signalling and processing systems — Software for railway control and protection systems*

---

<sup>1)</sup> This document is currently impacted by the corrigendum EN 15734-2:2010/AC:2012.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-