

**Raudteealased rakendused. Juhikabiinide  
õhukonditsioneerid. Osa 1: Mugavusnäitajad  
KONSOLIDEERITUD TEKST**

Railway applications - Air conditioning for driving cabs -  
Part 1: Comfort parameters CONSOLIDATED TEXT

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Käesolev Eesti standard EVS-EN 14813-1:2006+A1:2010 sisaldab Euroopa standardi EN 14813-1:2006+A1:2010 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 31.12.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 03.11.2010.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 14813-1:2006+A1:2010 consists of the English text of the European standard EN 14813-1:2006+A1:2010.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 03.11.2010.</p> <p>The standard is available from Estonian standardisation organisation.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ICS 45.060.10

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

English Version

## Railway applications - Air conditioning for driving cabs - Part 1: Comfort parameters

Applications ferroviaires - Conditionnement de l'air pour  
cabines de conduite - Partie 1: Paramètres de bien-être

Bahnanwendungen - Luftbehandlung in Führerräumen -  
Teil 1: Behaglichkeitsparameter

This European Standard was approved by CEN on 26 June 2006 and includes Amendment 1 approved by CEN on 28 September 2010.

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 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 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

# Contents

Page

|                                                                                                           |    |
|-----------------------------------------------------------------------------------------------------------|----|
| Foreword.....                                                                                             | 4  |
| Introduction .....                                                                                        | 5  |
| 1 Scope .....                                                                                             | 6  |
| 2 Normative references .....                                                                              | 6  |
| 3 Terms and definitions.....                                                                              | 6  |
| 4 Driving cab classification.....                                                                         | 10 |
| 5 Comfort parameters.....                                                                                 | 11 |
| 6 Exterior conditions .....                                                                               | 11 |
| 6.1 Determination of climatic zones.....                                                                  | 11 |
| 6.2 Normal exterior operating conditions.....                                                             | 11 |
| 6.3 Extreme exterior operating conditions.....                                                            | 11 |
| 7 Performance of the heating and cooling installations.....                                               | 11 |
| 7.1 Heating .....                                                                                         | 11 |
| 7.2 Preheating.....                                                                                       | 12 |
| 7.3 Cooling.....                                                                                          | 12 |
| 7.4 Precooling.....                                                                                       | 12 |
| 7.5 Stand by operation .....                                                                              | 12 |
| 8 Control .....                                                                                           | 12 |
| 8.1 General.....                                                                                          | 12 |
| 8.2 Interior temperature setting (Tic) .....                                                              | 12 |
| 8.2.1 General.....                                                                                        | 12 |
| 8.2.2 Temperature control not related to exterior temperature.....                                        | 13 |
| 8.2.3 Temperature control related to exterior temperature.....                                            | 13 |
| 8.3 Fan speed control.....                                                                                | 13 |
| 9 Comfort condition requirements.....                                                                     | 13 |
| 9.1 Temperatures in the comfort envelope .....                                                            | 13 |
| 9.1.1 Range of the interior temperature (Tim) with respect to the interior temperature setting (Tic)..... | 13 |
| 9.1.2 Range of the interior air temperature in a vertical section of a seated driver.....                 | 13 |
| 9.2 Relative humidity of air conditioned vehicles.....                                                    | 13 |
| 9.3 Surface temperatures inside and surrounding the comfort envelope .....                                | 14 |
| 9.4 Temperature at the supply air outlets.....                                                            | 14 |
| 9.5 Air speed.....                                                                                        | 14 |
| 9.6 Air quantities .....                                                                                  | 14 |
| 9.6.1 Outside air or fresh air .....                                                                      | 14 |
| 9.6.2 Recirculated air .....                                                                              | 14 |
| 10 Complementary requirements.....                                                                        | 15 |
| 10.1 Heat transfer coefficient ( $k$ ).....                                                               | 15 |
| 10.2 Overall transmission factor of the windows .....                                                     | 15 |
| 10.3 Particle air filtration .....                                                                        | 15 |
| 10.4 Noise emission.....                                                                                  | 15 |
| 10.5 Vibration generation .....                                                                           | 15 |
| 10.6 Safety devices .....                                                                                 | 16 |
| 10.6.1 Heating .....                                                                                      | 16 |
| 10.6.2 Cooling.....                                                                                       | 16 |
| 10.6.3 Emergency ventilation.....                                                                         | 16 |
| 10.7 Protection against pressure waves.....                                                               | 16 |
| 10.8 Sealing against water, snow and dust.....                                                            | 16 |
| 10.9 Reliability, maintainability.....                                                                    | 16 |
| 10.9.1 Reliability .....                                                                                  | 16 |
| 10.9.2 Maintainability .....                                                                              | 16 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Annex A (normative) Acceptable air speed .....</b>                                                                                                                                                                                                                                                                                                                                                                                                | <b>17</b> |
| <b>Annex B (normative) Relative humidity in the comfort envelope.....</b>                                                                                                                                                                                                                                                                                                                                                                            | <b>18</b> |
| <b>Annex C (normative) Heat emitted by a seated person normally dressed.....</b>                                                                                                                                                                                                                                                                                                                                                                     | <b>20</b> |
| <b>Annex D (normative) Definition of climatic zones .....</b>                                                                                                                                                                                                                                                                                                                                                                                        | <b>21</b> |
| <b>Annex E (informative) Grouping of countries in climatic zones .....</b>                                                                                                                                                                                                                                                                                                                                                                           | <b>22</b> |
| <b>Annex ZA (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast)  .....</b> | <b>23</b> |

## Foreword

This document (EN 14813-1:2006+A1:2010) 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 May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

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 includes Amendment 1, approved by CEN on 2010-09-28.

This document supersedes EN 14813-1:2006.

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

**A1** This document has been prepared under a mandate given to CEN/CENELEC/ETSI 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. **A1**

This series of European Standard includes the following parts:

- EN 14813-1, *Railway applications — Air conditioning for driving cabs — Part 1: Comfort parameters*
- EN 14813-2, *Railway applications — Air conditioning for driving cabs — Part 2: Type tests*

In the context of this series, there are two further series on air conditioning in rolling stock:

- EN 13129-1, *Railway applications — Air conditioning for main line rolling stock — Part 1: Comfort parameters*
- EN 13129-2, *Railway applications — Air conditioning for main line rolling stock — Part 2: Type tests*
- EN 14750-1, *Railway applications — Air conditioning for urban and suburban rolling stock — Part 1: Comfort parameters*
- EN 14750-2, *Railway applications — Air conditioning for urban and suburban rolling stock — Part 2: Type tests*

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Introduction

The object of this European Standard is to establish common comfort parameters for the European railways. It also specifies the performance of the air-conditioning installations.

If necessary, the revised requirements due to the operating constraints of the vehicle will be detailed in the contractual specification. This European Standard applies if there is no particular clause in the contractual specification.

## 1 Scope

This European Standard is applicable to railway vehicle driving cabs which are air-conditioned or heated/ventilated. These include:

- locomotives;
- mainline, suburban and regional vehicles;
- urban vehicles such as metros and trams.

This European Standard does not consider the special operational requirements of shunt locomotives.

This European Standard specifies the comfort parameters for the driving cab to ensure driver comfort which helps safe operation.

The conditions under which the physical parameters mentioned in this European Standard shall be measured are defined in EN 14813-2.

## 2 Normative references

The following referenced documents are indispensable for the application 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 779:2002, *Particulate air filters for general ventilation — Determination of the filtration performance*

EN 14813-2:2006, *Railway applications — Air conditioning for driving cabs — Part 2: Type tests*

EN 50126, *Railway applications — The specification and demonstration of reliability, availability, maintainability and safety (RAMS)*

## 3 Terms and definitions

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

### 3.1

#### **comfort**

agreeable sensation perceived by a person concerning his climatic environment

### 3.2

#### **air conditioning installations**

equipment intended for ventilation and/or heating and/or cooling and/or filtration

### 3.3

#### **forced air ventilation**

air circulation generated by a mechanical action

### 3.4

#### **natural ventilation**

air circulation generated without mechanical action