SVENSK STANDARD SS-EN 50238

Fastställd	Utgåva	Sida	Ingår i
2003-08-26	1	1 (1+36)	SEK Område 9

Svenska Elektriska Kommissionen, SEK

Järnvägsanläggningar – Kompatibilitet mellan rälsfordon och fordonsdetekterande system

Railway applications – Compatibility between rolling stock and train detection systems

Som svensk standard gäller europastandarden EN 50238:2003. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50238:2003.

Nationellt förord

SS-EN 50238 skall användas tillsammans med standarderna i serien SS-EN 50121.

ICS 29.180; 45.060.10

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

Svenska Elektriska Kommissionen, SEK, svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD **EN 50238**

NORME EUROPÉENNE

EUROPÄISCHE NORM February 2003

ICS 29.180; 45.060.10

English version

Railway applications – Compatibility between rolling stock and train detection systems

Applications ferroviaires – Compatibilité entre matériel roulant et systèmes de détection de train

Bahnanwendungen – Kompatibilität zwischen Fahrzeugen und Gleisfreimeldesystemen

This European Standard was approved by CENELEC on 2002-12-01. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 50238:2003 E

Foreword

This European Standard was prepared by SC 9XA, Communication, signalling and processing systems, of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50238 on 2002-12-01.

This European Standard was prepared under a mandate given to CENELEC by the European Commisssion and the European Free Trade Association and supports the essential requirements of Directive 96/48/EC.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-12-01

- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-12-01

This European Standard is intended to be read in conjunction with the EN 50121 series.

Annexes designated “informative” are given for information only.
In this standard annexes A, B, C and D are informative.

Contents

Introduction

This European Standard defines a process to obtain the assurance that specific rolling stock operating on a specific route does not interfere with train detection systems installed on this route.

Compatibility problems between train detection systems and rolling stock are a significant obstacle to cross-acceptance of rolling stock in Europe. Unfortunately it is not possible to establish general rules for the maximum levels of interference allowed, valid for every country. This is due to the great diversity of rolling stock, power supply and return current systems, and train detection systems installed in Europe. This diversity leads to consideration of the problem of compatibility of rolling stock and train detection systems for specific routes to avoid unnecessarily restrictive specifications.

Compatibility is determined by both physical and electromagnetic considerations. With regard to EMC, the need is not for general values for maximum levels of interference permitted, but for convenient methods by which to specify the level of interference allowed for operation on specific routes.

Interference may be caused by

– rail currents,

– electromagnetic fields,

– differential voltage between axles,

as shown in Figure 1:

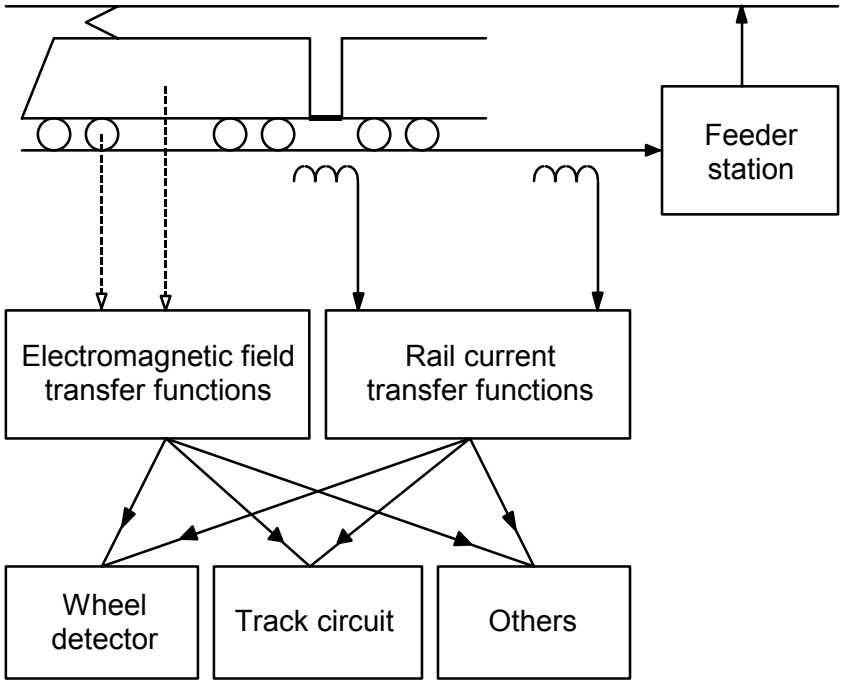

Figure 5 – Sources of electromagnetic interference

In practice, the susceptibility of the system is determined by

– the sensitivity of individual components of the system,

– the application of the components, i.e. the configuration of the system.

Therefore the problems concerning track circuits and axle counters or wheel detection systems will be looked at separately.

For determining the susceptibility of signalling systems, laboratory/simulation testing methods as well as methods to conduct tests on the “real railway” are proposed. Modelling enables worst-case conditions to be simulated. In addition, particular test sites are used because, from experience, they are known to provide the test evidence required. Then, taking account of the experience of the railways, it is possible to establish a general method for determining the susceptibility of train detection systems, described in this European Standard.

Before measuring the interference level on rolling stock, a sufficient knowledge of the electric circuit diagram of the power equipment is required, e.g. switching frequencies of on-board static converters, type of regulation used for power converters, resonant frequency of each filter, operating limits under high and low supply voltages, downgraded modes of operation etc.

1 Scope

The scope of this European Standard is to describe a procedure for mutual acceptance of rolling stock to run over specific routes. It describes the methods of measurement of interference currents, the methods of measurement of the susceptibility of train detection systems, the characterisation of traction power supplies and the procedure for acceptance. The result of the acceptance procedure is a structured justification document referred to as a “compatibility case”, which documents the evidence that the conditions for compatibility have been satisfied.

This European Standard is not generally applicable to those combinations of rolling stock, traction power supply and train detection system which were accepted as compatible prior to the issue of this European Standard. However, as far as is reasonably practicable, this European Standard may be applied to modifications of rolling stock, traction power supply or train detection systems which may affect compatibility.

The scope of the compatibility case is restricted to the demonstration of compatibility of rolling stock with a train detection system’s characterisation (e.g. gabarit). Radio based signalling systems are not within the scope of this European Standard.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 50121 Series	Railway applications – Electromagnetic compatibility
EN 50126	Railway applications – The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)
EN 50163	Railway applications – Supply voltages of traction systems
EN/ISO 9001	Quality management systems – Requirements
EN ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ORE B108/1	Unification of air-conditioning and electrical equipment in coaches
UIC 737-3	The application of thyristors in railway technology: Measures for the prevention of functional disturbances in signalling installations
UIC 550	Power supply installations for passenger stock