



BSI Standards Publication

Railway applications — Compatibility between rolling stock and train detection systems

Part 3: Compatibility with axle counters

National foreword

This Published Document is the UK implementation of CLC/TS 50238-3:2013. It supersedes DD CLC/TS 50238-3:2010, which will be withdrawn on 31 December 2016.

The UK participation in its preparation was entrusted by Technical Committee GEL/9, Railway Electrotechnical Applications, to Subcommittee GEL/9/1, Railway Electrotechnical Applications - Signalling and communications.

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

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

© The British Standards Institution 2013

Published by BSI Standards Limited 2013

ISBN 978 0 580 76384 7

ICS 29.280; 45.060.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 November 2013.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

TECHNICAL SPECIFICATION
 SPÉCIFICATION TECHNIQUE
 TECHNISCHE SPEZIFIKATION

CLC/TS 50238-3

October 2013

ICS 29.280; 45.060.10

Supersedes CLC/TS 50238-3:2010 + corr. Sep.2010

English version

**Railway applications -
 Compatibility between rolling stock and train detection systems -
 Part 3: Compatibility with axle counters**

Applications ferroviaires -
 Compatibilité entre le matériel roulant et
 les systèmes de détection des trains -
 Partie 3: Compatibilité avec les compteurs
 d'essieux

Bahnanwendungen -
 Kompatibilität zwischen Fahrzeugen und
 Gleisfreimeldesystemen -
 Teil 3: Kompatibilität mit Achszähler

This Technical Specification was approved by CENELEC on 2013-10-14.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Contents

Page

Foreword	3
Introduction.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions and abbreviations.....	5
3.1 Terms and definitions	5
3.2 Abbreviations.....	6
4 General aspects.....	6
4.1 Interference mechanism	6
4.1.1 General	6
4.1.2 Axle counter detector.....	6
4.1.3 Susceptibility of the detector on the rail.....	7
4.1.4 Sources of interference fields.....	7
4.2 Availability margin.....	8
4.3 Specific axle counter parameters	8
5 Compatibility requirements.....	8
5.1 RST emission limits based on the frequency management of the TSI CCS Interfaces Document (ERA/ERTMS/033281)	8
5.2 RST Emission limits for RST compatibility tests for individual axle counters on non-interoperable lines.....	9
5.2.1 General	9
5.2.2 Short duration interference limits.....	9
5.2.3 Mitigating arguments when limits are exceeded	9
Annex A (normative) Rolling stock emission limits	10
A.1 Emissions limits and evaluation parameters (narrow band)	10
A.2 Weighting of short duration interference.....	11
Bibliography.....	12
Figure	
Figure 1 – Axle counter detector, schematic diagram.....	7
Tables	
Table A.1 – Emission limits and evaluation parameters (narrow band)	10
Table A.2 – Weighting of short duration interference (T_{int} according to Table A.1).....	11

Foreword

This document (CLC/TS 50238-3:2013) has been prepared by CLC/SC 9XA "Communication, signalling and processing systems", of Technical Committee CLC/TC 9X "Electrical and electronic applications for railways".

This document supersedes CLC/TS 50238-3:2010.

CLC/TS 50238-3:2013 includes the following significant technical changes with respect to CLC/TS 50238-3:2010:

- this new edition represents a major technical change from the previous edition: the entire document has been changed, from the scope to the last clause, to take into account CLC/TC 9X Decision 47-13 "TC9X instructs WGA4-2 Convenor to remove sections about the procedure of testing of rolling stock from the draft TS 50238-3 (project 23571), considering SC9XA Decision 38/2";
- Annexes B to D have been deleted.

This Technical Specification is Part 3 in the following series:

- EN 50238, *Railway applications – Compatibility between rolling stock and train detection systems*;
- CLC/TS 50238-2, *Railway applications – Compatibility between rolling stock and train detection systems – Part 2: Compatibility with track circuits*;
- CLC/TS 50238-3, *Railway applications – Compatibility between rolling stock and train detection systems – Part 3: Compatibility with axle counters*.

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

Introduction

This Technical Specification defines the interference limits and evaluation criteria for electromagnetic compatibility between rolling stock and axle counter detectors.

The limits have been defined on the basis of a test specification described in prEN 50617-2:2013 [2] (CLC/SC9XA/Sec0779/CD) (laboratory tests).

This Technical Specification defines

- a set of interference limits for magnetic fields resulting from both rail current and equipment on board the vehicles,
- evaluation criteria to verify rolling stock emissions and demonstrate compatibility with the interference limits for magnetic fields,
- traceability of requirements (type of axle counter detectors considered for the limits).

In the relevant frequency range of the axle counter detectors, the magnetic field is dominant and only this type of field is considered. Experience has shown that the effects of electric fields are insignificant and therefore not considered.

1 Scope

For the purpose of demonstrating compatibility between rolling stock and axle counter detectors, this Technical Specification defines the interference limits and evaluation methods to verify rolling stock emissions. Wheel sensors and crossing loops are not covered by this Technical Specification.

This Technical Specification gives recommended individual limits to be applied to establish compatibility between RST and all selected types of axle counter detectors, including any covered by national standards.

The list of selected types of axle counters and their limits for compatibility are drawn on the basis of established performance criteria. It is expected that the trend for newly signalled interoperable lines will be fitted with types that meet the compatibility limits published in the TSI CCS Interfaces Document (ERA/ERTMS/033281).

To ensure adequate operational availability, it is essential that the rolling stock complies with the defined limits; otherwise, the established availability of the valid output function of axle counter detectors may be compromised.

NOTE The influences from metal parts or inductively coupled resonant circuits on the vehicle, eddy current brakes or magnetic brakes, are not covered by this Technical Specification but are considered on the basis of national technical specifications.

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 50238:2003, *Railway applications – Compatibility between rolling stock and train detection systems*

ERA/ERTMS/033281, *Interfaces between control command and signalling trackside and other subsystems*, version 1.0, published on 2012-02-23

3 Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in EN 50238:2003 and the following apply.

3.1 Terms and definitions

3.1.1

axle counter detector

detector consisting of the axle counter sensor and of the detection circuit, which includes in general filters and rectifiers

3.1.2

axle counter sensor

sensor head mounted in the track

3.1.3

axle counter system

whole system including axle counter sensor, axle counter detector and the evaluation unit