SVENSK STANDARD SS-EN 50463

Fastställd	Utgåva	Sida	Ansvarig kommitté
2008-01-21	1	1 (1+39)	SEK TK 9

Järnvägsanläggningar – Energimätning i rälsfordon

Railway application –
Energy measurement on board trains

Som svensk standard gäller europastandarden EN 50463:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50463:2007.

ICS 45.060.10

Denna standard är fastställd av SEK Svensk Elstandard,
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

SEK Svensk Elstandard 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.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

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

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50463

November 2007

ICS 45.060.10

English version

Railway applications - Energy measurement on board trains

Applications ferroviaires - Mesure d'énergie à bord des trains

Bahnanwendungen - Energiemessung auf Bahnfahrzeugen

This European Standard was approved by CENELEC on 2007-07-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 50463:2007 E

SEK Svensk Elstandard

Foreword

This European Standard was prepared by the 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 50463 on 2007-07-01.

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)	2008-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-07-01

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Introduction

This European Standard has been prepared using EN 62053 as reference standard. As many new requirements and tests had to be added, this new standard has been split into five clauses, namely

1 Scope

2 Normative references

3 Definitions

4 Requirements

5 Tests and test conditions.

For all tests which are not specified in this standard, the existing IEC publications apply.

This standard covers the "standard meter", which may be used for energy metering on board trains. It does not deal with special features (such as solution with the section that perform the measure in separate housing respect to display). These might be covered in separate International Standards.

This standard considers accuracy class 1.

The test levels are regarded as minimum values to ensure the proper functioning of the meter under normal working conditions. For special application, alternative test levels might be necessary and should be agreed by the user and the manufacturer.

A static meter faces the same general environmental conditions as the other electronic devices on board trains. Therefore, the specification will implement all the requirements set by EN 50155 for class TX.

Regarding the influence of harmonics, special test procedures had to be incorporated. These tests check the functionality of the meter when the meter is exposed to large distortions in the current circuit and the accuracy of the meter with 5th harmonic in the current and voltage circuit (see Annex B).

To test accurate operation of the meter under practical conditions have been specified (see 5.7.2.2):

- half-wave rectification (d.c. and even harmonics);
- phase-fired control (odd harmonics);
- burst control (sub-harmonics).

To check if a meter accurately measures total energy in the presence of harmonics, a test with 5th harmonic in both the current and voltage circuits has been specified. It is assumed that correct measurement of 5th harmonic energy indicates that measurement for other harmonics will be good.

The reliability aspects of equipment for electrical energy measurement and load control will be handled separately.

For tests and test conditions, existing tests and test levels have been taken from EN 62053 and IEC or EN standards as appropriate.

The IEC and EN publications referred to in this standard are listed in Clause 2.

1 Scope

This European Standard applies only to newly manufactured static energy meters of accuracy class 1, for the measurement on board, of alternating current electrical energy or direct current electrical energy used for traction applications operating at the following supply voltages:

- 25 kV (single phase) at 50 Hz,
- 15 kV (single phase) at 16,7 Hz,
- 3 kV, 1,5 kV and 0,75 kV d.c.

It applies only to static meters consisting of a measuring element and register(s) enclosed together in a meter enclosure.

It does not apply to:

a) portable meters;

b) data interfaces with on board systems;

c) data management system;

d) data interfaces with telecommunication system;

e) on-board global measurement systems; additionally, if voltage and current transducers are considered of accuracy class 0,5. If these transducers are multi-service, specific and separate outputs will be considered.

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.

CLC/TS 45545-5	2004	Railway applications - Fire protection on railway vehicles – Part 5: Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles
EN 50121-3-2	2006	Railway applications - Electromagnetic compatibility (EMC) – Part 3-2: Rolling stock - Apparatus
EN 50155	2001	Railway applications – Electronic equipment used on rolling stock
EN 50163	2004	Railway applications - Supply voltages of traction systems
EN 55022	2006	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 22:2005, mod.)
EN 60085	2004	Electrical insulation - Thermal classification (IEC 60085:2004)