SVENSK STANDARD SS-EN 60349-2

Fastställd	Utgåva	Sida	Ingår i
2001-11-30	1	1 (1+32)	SEK Område 9

Svenska Elektriska Kommissionen, SEK

Järnvägsanläggningar – Roterande elektriska maskiner för räls- och vägfordon – Del 2: Växelströmsmotorer för omriktardrift

Railway applications – Rotating electrical machines for rail and road vehicles – Part 2: Electronic converter-fed alternating current motors

Som svensk standard gäller europastandarden EN 60349-2:2001. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60349-2:2001.

Nationellt förord

Europastandarden EN 60349-2:2001

består av:

- **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
- **IEC 60349-2, First edition, 1993 - Railway applications - Rotating electrical machines for rail and road vehicles - Part 2: Electronic converter-fed alternating current motors**

  utarbetad inom International Electrotechnical Commission, IEC.

Tidigare utgiven svensk standard SS-ENV 60349-2, utgåva 1, 1994, gäller ej fr o m 2001-11-30.

ICS 29.280

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK, som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00. *Telefax*: 08 - 444 14 30
E-post: sek@sekom.se. *Internet*: www.sekom.se

EUROPEAN STANDARD **EN 60349-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM October 2001

ICS 29.280

English version

Railway applications - Rotating electrical machines for rail and road vehicles Part 2: Electronic converter-fed alternating current motors

(IEC 60349-2:1993, modified)

Traction électrique -
Machines électriques tournantes des véhicules ferroviaires et routiers
Partie 2: Moteurs à courant alternatif alimentés par convertisseur électronique
(CEI 60349-2:1993, modifiée)

Bahnanwendungen -
Drehende elektrische Maschinen für Bahn- und Straßenfahrzeuge
Teil 2: Umrichtergespeiste Wechselstrommotoren
(IEC 60349-2:1993, modifiziert)

This European Standard was approved by CENELEC on 2000-08-01. 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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, 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 60349-2:2001 E

Foreword

The text of the International Standard IEC 60349-2:1999, prepared by IEC TC 9, Electric traction equipment, together with the common modifications prepared by SC 9XB, Electromechanical material on board rolling stock, of the Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60349-2 on 2000-08-01.

This European Standard supersedes ENV 60439-2:1993.

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2002-04-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-08-01

In this European Standard the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

Annexes designated „normative“ are part of the body of the standard.
Annexes designated „informative“ are given for information only.
In this standard, Annexes A, B, D and E are normative and Annex C is informative.

———————

Contents

Introduction

This document supplements or modifies IEC 60349 Part 2. The changes are considered necessary to make it acceptable as a European Standard following the issue of EN 61377 “Combined testing of inverter-fed alternating current motors and their control”, and re-issue of EN 60349 Part 1 “Rotating electrical machines for rail and road vehicles – Machines other than electronic converter-fed alternating current motors”.

The main changes are summarised below.

- EN 61377 and IEC 60349 Part 2 both call up type tests for motors on converter supplies. The modifications endeavour to rationalise the interface between these two documents so as to avoid the duplication of tests unless specifically required. A new thermal test on a sinusoidal supply has been introduced to remove the need of using a converter for repeat type tests.

The re-issue of EN 60349 Part 1 modifies the requirements to provide a test specification and a test report including a quantitative vibration test (type test).

1 General

1.1 Scope and object

1.1.1 This European Standard applies to convertor-fed alternating current motors forming part of the equipment of electrically propelled rail and road vehicles.

The object of this part 2 of EN 60349 is to enable the performance of a motor to be confirmed by tests and to provide a basis for assessment of its suitability for a specified duty and for comparison with other motors.

Where further testing is to be undertaken to EN 61377 “Combined testing of inverter-fed alternating current motors and their control”, it may be preferable, to avoid duplication, that some type and investigation tests be carried out on the combined test bed.

Particular attention is drawn to the need for collaboration between the designers of the motor and its associated convertor as detailed in clause 3.1.

NOTE 1 This part also applies to motors installed on trailers hauled by powered vehicles.

NOTE 2 The basic requirements of this part may be applied to motors for special purpose vehicles such as mine locomotives but this part does not cover flameproof or other special features that may be required.

NOTE 3 It is not intended that this part should apply to motors on small road vehicles, such as battery-fed delivery vehicles, factory trucks, etc. This part also does not apply to minor machines such as windscreen wiper motors, etc. that may be used on all types of vehicles.

NOTE 4 Industrial type motors complying with EN 60034 may be suitable for some auxiliary drives, providing that it is demonstrated that operation on a convertor supply will meet the requirements of the particular application.

1.1.2 The rating of traction motors fed in parallel by a common convertor has to take account of the effect on load-sharing of differences of wheel diameter and of motor characteristics and also of weight transfer when operating at high coefficients of adhesion. The user is to be informed of the maximum permissible difference in wheel diameter for the particular application.

1.1.3 The electrical input to motors covered by this part has to be from an electronic convertor.

NOTE At the time of drafting this part only the following combinations of motors and convertors had been used for traction applications, but it may also apply to other combinations which may be used in the future:
- asynchronous motors fed by voltage source convertors;
- asynchronous motors fed by current source convertors;
- synchronous motors fed by current source convertors.

The motors covered by this part are classified as follows:

- Traction motors
  Motors for propelling rail or road vehicles.

- Auxiliary motors not covered by EN 60034
  Motors for driving compressors, fans, auxiliary generators or other auxiliary machines.

1.2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. 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.

EN 50163	Railway applications - Supply voltages of traction systems
EN 50207	Railway applications - Electronic power convertors for rolling stock
EN 60034-2	Rotating electrical machines – Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles) (IEC 60034-2 + IEC 60034-2A)
EN 60034-9	Rotating electrical machines - Part 9 - Noise limits (IEC 60034-9)
EN 60034-14	Rotating electrical machines – Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher – Measurement, evaluation and limits of the vibration severity (IEC 60034-14)
EN 60651	Sound level meters (IEC 60651)
EN 61260	Electroacoustics - Octave-band and fractional-octave-band filters (IEC 61260)
EN 61373	Railway applications - Rolling stock equipment - Shock and vibration tests (IEC 61373)
EN 61377	Electric traction - Rolling stock - Combined testing of inverter-fed alternating current motors and their control (IEC 61377)
HD 53.8	Rotating electrical machines – Part 8: Terminal markings and direction of rotation of rotating machines (IEC 60034-8 + A1 + A2)
HD 566 S1	Thermal evaluation and classification of electrical insulation (IEC 60085)
IEC 60050-131	International Electrotechnical Vocabulary – Chapter 131: Electric and magnetic circuits
IEC 60050-151	International Electrotechnical Vocabulary – Chapter 151: Electrical and magnetic devices

IEC 60050-411	International Electrotechnical Vocabulary – Chapter 411: Rotating machines
IEC 60050-811	International Electrotechnical Vocabulary – Chapter 811: Electric traction