SVENSK STANDARD SS-EN 60034-1

Fastställd	Utgåva	Sida	Ingår i
2004-08-23	3	1 (1+71)	SEK Område 2

Svenska Elektriska Kommissionen, SEK

Roterande elektriska maskiner – Del 1: Märkdata och driftegenskaper

Rotating electrical machines – Part 1: Rating and performance

Som svensk standard gäller europastandarden EN 60034-1:2004. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60034-1:2004.

Nationellt förord

Europastandarden EN 60034-1:2004

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60034-1, Eleventh edition, 2004 - Rotating electrical machines - Part 1: Rating and performance**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60034-1, utgåva 2, 1999, SS-EN 60034-1 C1, utgåva 1, 2000, SS-EN 60034-1/A2, utgåva 1, 1999 och SS-EN 60034-1/A11, utgåva 1, 2002, gäller ej fr o m 2007-06-01.

ICS 29.160

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.

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 **EN 60034-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM June 2004

ICS 29.160

Supersedes EN 60034-1:1998 + A1:1998 + A2:1999 + A11:2002

English version

Rotating electrical machines
Part 1: Rating and performance
(IEC 60034-1:2004)

Machines électriques tournantes
Partie 1: Caractéristiques assignées
et caractéristiques de fonctionnement
(CEI 60034-1:2004)

Drehende elektrische Maschinen
Teil 1: Bemessung und Betriebsverhalten
(IEC 60034-1:2004)

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 60034-1:2004 E

Foreword

The text of document 2/1278/FDIS, future edition 11 of IEC 60034-1, prepared by IEC TC 2, Rotating machinery, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60034-1 on 2004-06-01.

This European Standard supersedes EN 60034-1:1998 + corrigendum February 2000 + A1:1998 + A2:1999 + A11:2002.

The major changes introduced in this edition are:

Clause or Subclause	**Change**
7.2.2	New requirements for a.c. generators to supply non-linear circuits
8	Major changes to Tables 4, 7 and 9
9.1	New requirements for routine tests
9.2	Table 16 Test voltages of auxiliaries
9.11	Total harmonic distortion for synchronous machines
11.1	Protective earthing for machines
12.1	Table 20 Tolerance on efficiency
13	Electromagnetic compatibility

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) 2005-03-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-06-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60034-1:2004 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60027-1	- [1)]	Letter symbols to be used in electrical technology Part 1: General	HD 60027-1	2004 [2)]
IEC 60027-4	- [1)]	Part 4: Symbols for quantities to be used for rotating electrical machines	HD 245.4 S1	1987 [2)]
IEC 60034-2	- [1)]	Rotating electrical machines Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles)	EN 60034-2	1996 [2)]
IEC 60034-3	- [1)]	Part 3: Specific requirements for turbine-type synchronous machines	EN 60034-3	1995 [2)]
IEC 60034-5	- [1)]	Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	EN 60034-5	2001 [2)]
IEC 60034-6	- [1)]	Part 6: Methods of cooling (IC Code)	EN 60034-6	1993 [2)]
IEC 60034-8	- [1)]	Part 8: Terminal markings and direction of rotation	EN 60034-8	2002 [2)]
IEC 60034-12	- [1)]	Part 12: Starting performance of single-speed three-phase cage induction motors	EN 60034-12	2002 [2)]
IEC 60034-15	- [1)]	Part 15: Impulse voltage withstand levels of rotating a.c. machines with form-wound stator coils	EN 60034-15	1996 [2)]
IEC/TS 60034-17	- [1)]	Part 17: Cage induction motors when fed from converters - Application guide	CLC/TS 60034-17	
IEC 60034-18	Series	Part 18: Functional evaluation of insulation systems	EN 60034-18	Series

1) Undated reference.

2) Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 60038 (mod)	- [1)]	IEC standard voltages [3)]	HD 472 S1	1989 [2)]
IEC 60050-411	1996	International Electrotechnical Vocabulary (IEV) Chapter 411: Rotating machines	-	-
IEC 60060-1	- [1)]	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991 [2)]
IEC 60072-3	- [1)]	Dimensions and output series for rotating electrical machines Part 3: Small built-in motors - Flange numbers BF10 to BF50	-	-
IEC 60204-1	- [1)]	Safety of machinery - Electrical equipment of machines Part 1: General requirements	EN 60204-1 + corr. September	1997 [2)] 1998
IEC 60204-11	- [1)]	Part 11: Requirements for HV equipment for voltages above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV	EN 60204-11	2000 [2)]
IEC 60279	- [1)]	Measurement of the winding resistance of an a.c. machine during operation at alternating voltage	-	-
IEC 60335-1 (mod)	- [1)]	Household and similar electrical appliances - Safety Part 1: General requirements	EN 60335-1 + A11	2002 [2)] 2004
IEC 60445	- [1)]	Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system	EN 60445	2000 [2)]
IEC 60971	- [1)]	Semiconductor convertors. Identification code for convertor connections	-	-
IEC 61293	- [1)]	Marking of electrical equipment with ratings related to electrical supply - Safety requirements	EN 61293	1994 [2)]
IEC 61986	- [1)]	Rotating electrical machines - Equivalent loading and super-position techniques - Indirect testing to determine temperature rise	EN 61986	2002 [2)]
IEC 62114	- [1)]	Electrical insulation systems (EIS) - Thermal classification	EN 62114	2001 [2)]

3) The title of HD 472 S1 is : Nominal voltages for low-voltage public electricity supply systems.

Publication	Year	Title	EN/HD	Year
CISPR 11	- [1)]	Industrial scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement	-	-
CISPR 14	Series	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus	EN 55014	Series
CISPR 16	Series	Specification for radio disturbance and immunity measuring apparatus and methods	EN 55016	Series

CONTENTS

ROTATING ELECTRICAL MACHINES –

Part 1: Rating and performance

1 Scope

This part of IEC 60034 is applicable to all rotating electrical machines except those covered by other IEC standards, for example, IEC 60349.

Machines within the scope of this standard may also be subject to superseding, modifying or additional requirements in other publications, for example, IEC 60079, and IEC 60092.

NOTE If particular clauses of this standard are modified to meet special applications, for example machines subject to radioactivity or machines for aerospace, all other clauses apply insofar as they are compatible.

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.

IEC 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*

IEC 60027-4, *Letter symbols to be used in electrical technology – Part 4: Symbols for quantities to be used for rotating electrical machines*

IEC 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 60034-3, *Rotating electrical machines – Part 3: Specific requirements for turbine-type synchronous machines*

IEC 60034-5, *Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code)- Classification*

IEC 60034-6, *Rotating electrical machines – Part 6: Methods of cooling (IC code)*

IEC 60034-8, *Rotating electrical machines – Part 8: Terminal markings and direction of rotation*

IEC 60034-12, *Rotating electrical machines – Part 12: Starting performance of single-speed three-phase cage induction motors*

IEC 60034-15, *Rotating electrical machines – Part 15: Impulse voltage withstand levels of rotating a.c. machines with form-wound stator coils*

IEC 60034-17, *Rotating electrical machines – Part 17: Cage induction motors when fed from converters – Application guide*

IEC 60034-18 (all parts), *Rotating electrical machines – Functional evaluation of insulating systems*

IEC 60038, *IEC standard voltages*

IEC 60050(411):1996, *International Electrotechnical Vocabulary (IEV) – Chapter 411: Rotating machines*

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60072 (all parts), *Dimensions and output series for rotating electrical machines*

IEC 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60204-11, *Safety of machinery – Electrical equipment of machines – Part 11: Requirements for HV equipment for voltages above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV*

IEC 60279, *Measurement of the winding resistance of an a.c. machine during operation at alternating voltage*

IEC 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60445, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system*

IEC 60971, *Semiconductor convertors. Identification code for convertor connections*

IEC 61293, *Marking of electrical equipment with ratings related to electrical supply – Safety requirements*

IEC 61986, *Rotating electrical machines – Equivalent loading and super-position techniques – Indirect testing to determine temperature rise*

IEC 62114, *Electrical insulation systems – Thermal classification*

CISPR 11, *Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement*

CISPR 14, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus*

CISPR 16, *Specification for radio disturbance and immunity measuring apparatus and methods*