SVENSK STANDARD SS-EN 61009-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2013-01-22	3	1 (1+190)	SEK TK 17B

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Jordfelsbrytare med inbyggt överströmsskydd för bostadsinstallationer och liknande (RCBO) – Del 1: Allmänna regler

Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – Part 1: General rules

Som svensk standard gäller europastandarden EN 61009-1:2012. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61009-1:2012.

Nationellt förord

Europastandarden EN 61009-1:2012

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61009-1, Third edition, 2010 - Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61009-1, utgåva 2, 2004, SS-EN 61009-1/A11, utgåva 1, 2008, SS-EN 61009-1/A12, utgåva 1, 2009, SS-EN 61009-1/A13, utgåva 1, 2009, SS-EN 61009-1/A14, utgåva 1, 2012 och SS-EN 61009-1/A14 AC1, utgåva 1, 2013, gäller ej fr o m 2017-06-18.

ICS 29.120.50

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61009-1

December 2012

ICS 29.120.50

Supersedes EN 61009-1:2004 + corr. Jul.2006 + A11:2008 + A12:2009 + A13:2009 + A14:2012 + AC:2012

English version

Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules

(IEC 61009-1:2010, modified)

Interrupteurs automatiques à courant différentiel résiduel avec dispositif de protection contre les surintensités incorporé pour usages domestiques et analogues (DD) -
Partie 1: Règles générales
(CEI 61009-1:2010, modifiée)

Fehlerstrom-/Differenzstrom-Schutzschalter mit eingebautem Überstromschutz (RCBOs) für Hausinstallationen und für ähnliche Anwendungen -
Teil 1: Allgemeine Anforderungen
(IEC 61009-1:2010, modifiziert)

This European Standard was approved by CENELEC on 2012-06-18. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Ref. No. EN 61009-1:2012 E

SEK Svensk Elstandard

Foreword

This document (EN 61009-1:2012) consists of the text of IEC 61009-1:2010 prepared by IEC/TC 23E "Circuit-breakers and similar equipment for household use", together with the common modifications prepared by CLC/TC 23E "Circuit breakers and similar devices for household and similar applications".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-06-18
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-06-18

This document supersedes EN 61009-1:2004 + corr.Jul.2006 + A11:2008 + A12:2009 + A13:2009 + A14:2012 + AC:2012.

– complete revision of EMC sequences, including the new test T.2.6, already approved in EN 61543;

– clarification of RCDs current/time characteristics reported in Tables 2 and 3;

– revision of test procedure for $I_{\Delta n}$ between 5 A and 200 A;

– tests for the use of RCBOs in IT systems;

– testing procedure regarding the 6mA d.c. current superimposed to the fault current;

– improvement highlighting RCDs with multiple sensitivity;

– some alignments with EN 60898-1.

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 61009-1:2010 are prefixed “Z”.

Endorsement notice

The text of the International Standard IEC 61009-1:2010 was approved by CENELEC as a European Standard with agreed common modifications.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
CISPR 14-1 + corr. January	2005 2009	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	EN 55014-1	2006
IEC 60051	Series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	Series
IEC 60060-1 + corr. March + corr. March	1989 1990 1992	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1 [1)]	1991
IEC 60060-2	1994	High-voltage test techniques - Part 2: Measuring systems	EN 60060-2 [2)]	1994
IEC 60068-2-30	2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005
IEC 60068-3-4	2001	Environmental testing - Part 3-4: Supporting documentation and guidance - Damp heat tests	EN 60068-3-4	2002
IEC 60112 + corr. October + corr. June	2003 2003 2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
IEC 60228	2004	Conductors of insulated cables	EN 60228 + corr. May	2005 2005
IEC 60364	Series	Low-voltage electrical installations	HD 60364	Series
IEC 60417	Data-base	Graphical symbols for use on equipment	-	-
IEC 60364-5-52	2001	Electrical installations of buildings - Part 5-52: Selection and erection of electrical equipment - Wiring systems	-	-
IEC 60364-5-53	2001	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007

[1)] HD 588.1 S1 is superseded by EN 60060-1:2010, which is based on IEC 60060-1:2010.
[2)] EN 60060-2 is superseded by EN 60060-2:2011, which is based on IEC 60060-2:2010.

Publication	Year	Title	EN/HD	Year
IEC 60898-1 (mod)	2002	Electrical accessories - Circuit breakers for overcurrent protection for household and similar installations - Part 1: Circuit-breakers for a.c. operation	EN 60898-1 + corr. February + A11 + A12	2003 2004 2005 2008
IEC 61009	Series	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's)	EN 61009	Series
IEC 61543	1995	Residual current-operated protective devices (RCDs) for household and similar use - Electromagnetic compatibility	EN 61543 + corr. December + A12	1995 1997 2005
ISO 7000	1989	Graphical symbols for use on equipment - Index and synopsis	-	-

CONTENTS

INTRODUCTION

This part includes definitions, requirements and tests covering all types of RCBOs. For applicability to a specific type, this part applies in conjunction with the relevant part, as follows:

Part 2-1: Applicability of the general rules to RCBOs functionally independent of line voltage.

Part 2-2: Applicability of the general rules to RCBOs functionally dependent on line voltage.

RESIDUAL CURRENT OPERATED CIRCUIT-BREAKERS WITH INTEGRAL OVERCURRENT PROTECTION FOR HOUSEHOLD AND SIMILAR USES (RCBOs) –

Part 1: General rules

1 Scope

This International Standard applies to residual current operated circuit-breakers with integral overcurrent protection functionally independent of, or functionally dependent on, line voltage for household and similar uses (hereafter referred to as RCBOs), for rated voltages not exceeding 440 V a.c. with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A and rated short-circuit capacities not exceeding 25 000 A for operation at 50 Hz or 60 Hz.

These devices are intended to protect people against indirect contact, the exposed conductive parts of the installation being connected to an appropriate earth electrode and to protect against overcurrents the wiring installations of buildings and similar applications. They may be used to provide protection against fire hazards due to a persistent earth fault current, without the operation of the overcurrent protective device.

RCBOs having a rated residual operating current not exceeding 30 mA are also used as a means for additional protection in the case of failure of the protective means against electric shock.

This standard applies to devices performing simultaneously the function of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening of the protected circuit when the residual current exceeds this value, and also of performing the function of making, carrying and breaking overcurrents under specified conditions.

NOTE 1 The content of the present standard related to operation under residual current conditions is based on IEC 61008-1. The content of the present standard related to protection against overcurrents is based on IEC 60898-1.

NOTE 2 RCBOs are essentially intended to be operated by uninstructed persons and designed not to require maintenance. They may be submitted for certification purposes.

NOTE 3 Installation and application rules of RCBOs are given in the IEC 60364 series.

They are intended for use in an environment with pollution degree 2.

NOTE 4 For more severe overvoltage conditions, circuit-breakers complying with other standards (e.g. IEC 60947-2) should be used.

NOTE 5 For environments with higher pollution degrees, enclosures giving the appropriate degree of protection should be used.

RCBOs of the general type are resistant to unwanted tripping, including the case where surge voltages (as a result of switching transients or induced by lightning) cause loading currents in the installation without occurrence of flashover.

RCBOs of type S are considered to be sufficiently proof against unwanted tripping even if the surge voltage causes a flashover and a follow-on current occurs.

NOTE 6 Surge arresters installed downstream of the general type of RCBOs and connected in common mode may cause unwanted tripping.

RCBOs are suitable for isolation.

RCBOs complying with this standard, with the exception of those with an uninterrupted neutral, are suitable for use in IT systems.

Special precautions (e.g. lightning arresters) may be necessary when excessive overvoltages are likely to occur on the supply side (for example in the case of supply through overhead lines) (see IEC 60364-4-44).

NOTE 7 For RCBOs having a degree of protection higher than IP20 special constructions may be required.

This standard also applies to RCBOs obtained by the assembly of an adaptable residual current device with a circuit-breaker. The mechanical assembly shall be effected in the factory by the manufacturer, or on site, in which case the requirements of Annex G shall apply. It also applies to RCBOs having more than one rated current, provided that the means for changing from one discrete rating to another is not accessible in normal service and that the rating cannot be changed without the use of a tool.

Supplementary requirements may be necessary for RCBOs of the plug-in type.

Particular requirements are necessary for RCBOs incorporated in or intended only for association with plugs and socket-outlets or with appliance couplers for household and similar general purposes and if intended to be used at frequencies other than 50 Hz or 60 Hz.

NOTE 8 For the time being, for RCBOs incorporated in, or intended only for plugs and socket-outlets, the requirements of this standard in conjunction with the requirements of IEC 60884-1 may be used, as far as applicable.

NOTE 9 In DK, plugs and socket-outlets shall be in accordance with the requirements of the heavy current regulations section 107.

NOTE 10 In the UK, the plug part associated with an RCBO shall comply with BS 1363-1 and the socket-outlet(s) associated with an RCBO shall comply with BS 1363-2. In the UK, the plug part and the socket-outlet(s) associated with an RCBO need not comply with any IEC 60884-1 requirements.

This standard does not apply to:

– RCBOs intended to protect motors;
– RCBOs the current setting of which is adjustable by means accessible to the user in normal service.

The requirements of this standard apply for normal environmental conditions (see 7.1). Additional requirements may be necessary for RCBOs used in locations having severe environmental conditions.

RCBOs including batteries are not covered by this standard.

A guide for the coordination of RCBOs with fuses is given in Annex F.

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 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60060-2:1994, *High-voltage test techniques – Part 2: Measuring systems*

IEC 60068-2-30:2005, *Environmental testing – Part 2-30:Tests – Test Db: Damp heat, cyclic (12 + 12 h cycle)*

IEC 60068-3-4: 2001, *Environmental testing – Part 3-4: Supporting documentation and guidance – Damp heat tests*

IEC 60112:2003, Method *for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60364-5-52:2001, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring systems*[1]

IEC 60364-5-53:2001, *Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60898-1:2002, *Electrical accessories –Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation*

IEC 61543:1995, *Residual current-operated protective devices (RCDs) for household and similar use – Electromagnetic compatibility*

CISPR 14-1:2009, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus –Part 1: Emission*

1 A third edition is currently in preparation.