SVENSK STANDARD SS-EN 62606

Fastställd	Utgåva	Sida	Ansvarig kommitté
2014-01-29	1	1 (1+167)	SEK TK 17B

Ljusbågsdetektorer – Allmänna fordringar

General requirements for arc fault detection devices

Som svensk standard gäller europastandarden EN 62606:2013. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62606:2013.

Nationellt förord

Europastandarden EN 62606:2013

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62606, First edition, 2013 - General requirements for arc fault detection devices**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 29.120.00; 29.120.50

Denna standard är fastställd av SEK Svensk Elstandard,
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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.

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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 62606

November 2013

ICS 29.120; 29.120.50

English version

General requirements for arc fault detection devices
(IEC 62606:2013, modified)

Exigences générales des dispositifs pour la détection de défaut d'arcs
(CEI 62606:2013, modifiée)

Allgemeine Anforderungen an Fehlerlichtbogen-Schutzeinrichtungen
(IEC 62606:2013, modifiziert)

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

Ref. No. EN 62606:2013 E

SEK Svensk Elstandard

Foreword

The text of document 23E/785/FDIS, future edition 1 of IEC 62606, prepared by SC 23E, "Circuit-breakers and similar equipment for household use", of IEC TC 23, "Electrical accessories", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62606:2013.

A draft amendment, which covers common modifications to IEC 62606 (23E/785/FDIS), was prepared by CLC/TC 23E,"Circuit breakers and similar devices for household and similar applications" and approved by CENELEC.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-08-13
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-08-13

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.

In this standard, the following print types are used:
- *compliance statements: in italic type.*

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.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 62606:2013 was approved by CENELEC as a European Standard with common modifications.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60060-2	NOTE	Harmonized as EN 60060-2.
IEC 60112:2003	NOTE	Harmonized as EN 60112:2003 (not modified).
IEC 60269-1:2006	NOTE	Harmonized as EN 60269-1:2007 (not modified).
IEC 60664-3	NOTE	Harmonized as EN 60664-3.
IEC 60664-5	NOTE	Harmonized as EN 60664-5.
IEC 60695-2-11:2000	NOTE	Harmonized as EN 60695-2-11:2001 (not modified).
IEC 61000-4-2	NOTE	Harmonized as EN 61000-4-2.
IEC 61000-4-3	NOTE	Harmonized as EN 61000-4-3.
IEC 61000-4-4	NOTE	Harmonized as EN 61000-4-4.
IEC 61000-4-5:2005	NOTE	Harmonized as EN 61000-4-5:2006 (not modified).

IEC 61000-4-6	NOTE Harmonized as EN 61000-4-6.
IEC 61000-4-16:1998	NOTE Harmonized as EN 61000-4-16:1998 (not modified).
+A1:2001 +A2:2009	+A1:2004 +A2:2011
IEC 61210	NOTE Harmonized as EN 61210.

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
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 60364	Series	Low-voltage electrical installations	HD 60364	Series
IEC 60364-4-44 (mod)	2007	Low-voltage electrical installations - Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances	HD 60364-4-442	2012
IEC 60417	Data base	Graphical symbols for use on equipment	-	-
IEC 60479	Series	Effects of current on human beings and livestock	-	-
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
IEC 60695-2-10	2000	Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure	EN 60695-2-10[1)]	2001
IEC/TR 60755	-	General requirements for residual current operated protective devices	-	-
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 + A13	2003 2004 2005 2008 2012
IEC 61008-1 (mod)	2010	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) - Part 1: General rules	EN 61008-1	2012
IEC 61009-1 (mod)	2010	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules	EN 61009-1	2012

[1)] EN 60695-2-10 is superseded by EN 60695-2-10:2013, which is based on IEC 60695-2-10:2013.

Publication	Year	Title	EN/HD	Year
IEC 61543	1995	Residual current-operated protective devices	EN 61543	1995
+ A1 (mod)	2004	(RCDs) for household and similar use -	+ corr. December	1997
+ A2	2005	Electromagnetic compatibility	+ A11	2003
-	-		+ corr. May	2004
			+ A2	2006
			+ A12	2005
IEC 62423	-	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses	EN 62423	-
CISPR 14-1	2005	Electromagnetic compatibility - Requirements	EN 55014-1	2006
+ A1	2008	for household appliances, electric tools and similar apparatus - Part 1: Emission	+ A1	2009

CONTENTS

INTRODUCTION

This International Standard aims to provide necessary requirements and testing procedures for devices to be installed by skilled people in households and similar uses to mitigate the risk of igniting an electrical fire downstream of the device.

Residual Current Devices (RCDs) are recognised as efficient to reduce the risk of fire by detection of leakage current and arcing to ground as a consequence of tracking currents within an electrical installation. However, RCDs as fuses or circuit-breakers are not able to reduce the risk of electrical fire due to series or parallel arcing between live conductors.

During a series arc fault, there is no leakage to ground therefore RCDs cannot detect such a fault. Moreover, the impedance of the series arc fault reduces the load current, which will keep the current below the tripping threshold of the circuit-breaker and the fuse. In the case of a parallel arc between phase and neutral conductor, the current is only limited by the impedance of the installation. In the worst cases of sporadic arcs, the conventional circuit breakers were not designed for that purpose.

Experience and information available confirmed that the r.m.s. current value of an earth fault current caused by an arcing fault, which is able to ignite a fire, is not limited to the rated power supply frequency of 50/60 Hz, but may contain a much higher frequency spectrum that is not taken into account for the testing of RCDs.

It has been recognised that the risk of igniting a fire within an electrical installation can also be a consequence of an overvoltage due to a broken neutral in a three phase installation.

This standard covers devices designed to be installed in a distribution board at the origin of one or several final circuits of a fixed installation.

GENERAL REQUIREMENTS FOR ARC FAULT DETECTION DEVICES

1 Scope

This International Standard applies to arc fault detection devices (AFDD) for household and similar uses in a.c. circuits.

NOTE 1 In the USA, Arc Fault Circuit Interrupters (AFCI) are considered similar to AFDDs.

An AFDD is designed by the manufacturer:

– either as a single device having opening means able to open the protected circuit in specified conditions; or

– as a single device integrating a protective device; or

– as a separate unit, according to Annex D assembled on site with a declared protective device.

The integrated protection device is either a circuit-breaker in accordance with IEC 60898-1 or an RCD in accordance with IEC 61008-1, IEC 61009-1 or IEC 62423.

These devices are intended to mitigate the risk of fire in final circuits of a fixed installation due to the effect of arc fault currents that pose a risk of fire ignition under certain conditions if the arcing persists.

Protection against fire ignition due to overvoltage due to a broken neutral within a three phase installation to be included in this type of equipment as an additional option is under consideration in 9.22.

NOTE 2 Tracking current leads to arcing and therefore may ignite fire.

This International Standard applies to devices performing simultaneously the detection and discrimination of arcing current with regards to fire hazards and defines operating criteria under specified conditions for the opening of the circuit when the arcing current exceeds the limit values given in this standard.

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

The maximum rated voltage is 240 V a.c. AFDDs, according to this standard, are supplied either between line and neutral or between two lines.

The maximum rated current (I_n) is 63 A a.c.

AFDDs energised from batteries or a circuit other than the protected circuit are not covered by this standard.

AFDDs provide isolation, they are intended to be operated by uninstructed persons and do not require maintenance.

Particular requirements may be necessary for:

– AFDDs incorporated in or intended only for association with plugs and socket-outlets or with appliance couplers for household or similar general purposes;

– AFDDs intended to be used at frequencies other than 50 Hz or 60 Hz.

NOTE 3 For AFDDs incorporated in, or intended only for socket-outlets the requirements of this standard can be used, as far as applicable, in conjunction with the requirements of IEC 60884-1 or the national requirements of the country where the product is placed on the market.

NOTE 4 In the UK, the plug part and the socket-outlet part(s) need not comply with any IEC 60884-1 requirements. In the UK, the plug part shall comply with BS 1363-1 and the socket-outlet part(s) shall comply with BS 1363-2.

Special precautions (e.g. surge protective devices) may be necessary when excessive overvoltages are likely to occur on the supply side.

The requirements of this standard apply for standard conditions of temperature and environment. They are applicable to AFDDs intended for use in an environment with pollution degree 2. Additional requirements may be necessary for devices used in locations having more severe environmental conditions.

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.

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

IEC 60364-4-44:2007, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60417, *Graphical symbols for use on equipment*, available from: <http://www.graphical-symbols.info/equipment>

IEC 60479 (all parts), *Effects of current on human beings and livestock*

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 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC/TR 60755, *General requirements for residual current operated protective devices*

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 61008-1:2010, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*

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

IEC 61543:1995, *Residual current-operated protective devices (RCDs) for household and similar use – Electromagnetic compatibility*
Amendment 1:2004
Amendment 2:2005

IEC 62423, *Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses*

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