



**SLOVENSKI STANDARD**  
**SIST EN 60947-2:2006/A1:2009**  
**01-oktober-2009**

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**Nizkonapetostne stikalne naprave - 2. del: Odklopniki (IEC 60947-2:2006/A1:2009)**

Low-voltage switchgear and controlgear - Part 2: Circuit-breakers (IEC 60947-2:2006/A1:2009)

Niederspannungsschaltgeräte - Teil 2: Leistungsschalter (IEC 60947-2:2006/A1:2009)

Appareillage à basse tension - Partie 2: Disjoncteurs (CEI 60947-2:2006/A1:2009)

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**Ta slovenski standard je istoveten z: EN 60947-2:2006/A1:2009**

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**ICS:**

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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**SIST EN 60947-2:2006/A1:2009**                      **en,fr**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60947-2/A1**

July 2009

ICS 29.130.20

English version

**Low-voltage switchgear and controlgear -  
Part 2: Circuit-breakers**  
(IEC 60947-2:2006/A1:2009)

Appareillage à basse tension -  
Partie 2: Disjoncteurs  
(CEI 60947-2:2006/A1:2009)

Niederspannungsschaltgeräte -  
Teil 2: Leistungsschalter  
(IEC 60947-2:2006/A1:2009)

This amendment A1 modifies the European Standard EN 60947-2:2006; it was approved by CENELEC on 2009-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 17B/1636/FDIS, future amendment 1 to IEC 60947-2:2006, prepared by SC 17B, Low-voltage switchgear and controlgear, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60947-2:2006 on 2009-07-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-04-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2012-07-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of amendment 1:2009 to the International Standard IEC 60947-2:2006 was approved by CENELEC as an amendment to the European Standard without any modification.

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**Replace Annex ZA of EN 60947-2:2006 by:**

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-441 A1	1984 2000	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60051	Series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051-1	Series
IEC 60068-2-14 + A1	1984 1986	Environmental testing - Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999
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 60364 (mod)	Series	Low-voltage electrical installations	EN/HD 60364	Series
IEC 60417	Data- base	Graphical symbols for use on equipment	-	-
IEC 60617	Data- base	Graphical symbols for diagrams	-	-
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	2001
IEC 60695-2-11	2000	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001
IEC 60695-2-12	2000	Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability test method for materials	EN 60695-2-12	2001
IEC 60695-2-13	2000	Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignitability test method for materials	EN 60695-2-13	2001
IEC/TR 60755 A1 A2	1983 1988 1992	General requirements for residual current operated protective devices	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60898 (mod)	Series	Electrical accessories - Circuit breakers for overcurrent protection for household and similar installations	EN 60898	Series
IEC 60934	- <sup>1)</sup>	Circuit-breakers for equipment (CBE)	EN 60934	2001 <sup>2)</sup>
IEC 60947-1	2007	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	2007
IEC 60947-4-1	2000	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters -	EN 60947-4-1	2001
A1	2002	Electromechanical contactors and motor-starters	A1	2002
A2	2005		A2	2005
IEC 61000-3-2	2005	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)	EN 61000-3-2	2006
IEC 61000-3-3	1994	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection	EN 61000-3-3 + corr. July	1995 1997
A1	2001		A1	2001
A2	2005		A2	2005
IEC 61000-4-2	1995	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2 <sup>3)</sup>	1995
A1	1998		A1	1998
A2	2000		A2	2001
IEC 61000-4-3	2006	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2006
IEC 61000-4-4	2004	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2004
IEC 61000-4-5	2005	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006
IEC 61000-4-6	2003	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2007
+ A1	2004			
+ A2	2006			
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004
IEC 61000-4-13	2002	Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests	EN 61000-4-13	2002

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

<sup>3)</sup> EN 61000-4-2 + A1 + A2 are superseded by EN 61000-4-2:2009, which is based on IEC 61000-4-2:2008.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 61000-5-2	1997	Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines - Section 2: Earthing and cabling	-	-
IEC 61008-1 (mod) + A1 (mod) A2	1996 2002 2006 <sup>4)</sup>	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) - Part 1: General rules	EN 61008-1 + IS1 + A11 + A12	2004 2007 2007 2009
IEC 61009-1 (mod) + A1 (mod) + corr. May A2	1996 2002 2003 2006 <sup>5)</sup>	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's) - Part 1: General rules	EN 61009-1 + corr. July + A11 + A12 + A13	2004 2006 2008 2009 2009
IEC 61131-1	2003	Programmable controllers - Part 1: General information	EN 61131-1	2003
CISPR 11 (mod) + A1 (mod) A2	2003 2004 2006	Industrial scientific and medical (ISM) radio- frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement	EN 55011 A2	2007 2007
CISPR 22 (mod) A1 A2	2005 2005 2006	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	EN 55022 A1	2006 2007

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<sup>4)</sup> The technical content of IEC/A2:2006 is included in EN 61008-1:2004.

<sup>5)</sup> The technical content of IEC/A2:2006 is included in EN 61009-1:2004.

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IEC 60947-2

Edition 4.0 2009-01

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

AMENDMENT 1  
AMENDEMENT 1

Low-voltage switchgear and controlgear –  
Part 2: Circuit-breakers

(standards.iteh.ai)

Appareillage à basse tension –  
Partie 2: Disjoncteurs

[SIST EN 60947-2:2006/A1:2009](https://standards.iteh.ai/catalog/standards/sist/5299401c-57ff-42e1-9b35-94055e3538d1/sist-en-60947-2-2006-a1-2009)

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## FOREWORD

This amendment has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

The text of this amendment is based on the following documents:

FDIS	Report on voting
17B/1636/FDIS	17B/1651/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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Replace in the whole document "Utilization category" by "Selectivity category" except in Annex L.

## CONTENTS

*Add the following:*

8.5 Special tests – Damp heat, salt mist, vibration and shock

*Insert the following:*

Figure K.2 – Template for characteristics of cut-off current versus prospective current from 1 kA to 200 kA

Figure K.3 – Template for characteristics of cut-off current versus prospective current from 0,01 kA to 200 kA

Figure K.4 – Template for characteristics of let-through energy versus prospective current from 1 kA to 200 kA

Figure K.5 – Template for characteristics of let-through energy versus prospective current from 0,01 kA to 200 kA

Figure K.6 – Example of the use of template K.2

Figure K.7 – Example of the use of template K.4

*Insert the following:*

Table 9b – Applicability of tests or test sequences to four-pole circuit-breakers in a given frame size and design when tested according to the alternative programme 1 of 8.3.1.4

Table 9c – Applicability of tests or test sequences to 3-pole circuit-breakers in a given frame size and design when tested according to the alternative programme 2 of 8.3.1.4

## 1.2 Normative references

*Delete the reference to IEC 60364-4-41:2001.*

*Add the following reference:*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60617, *Graphical symbols for diagrams*

*Replace “IEC 60755:1983” by “IEC/TR 60755:1983”*

*Replace the reference to IEC 60947-1:2004 by the following:*

IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*

*Add, after IEC 60947-4-1:2000, the following reference:*

Amendment 2 (2005)

*Replace the reference to IEC 61000-3-2:2000 by the following:*

IEC 61000-3-2:2005, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

*Add, after IEC 61000-3-3:1994, the following reference:*

Amendment 2 (2005)

*Replace the reference to IEC 61000-4-3:2002 by the following:*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

*Replace the reference to IEC 61000-4-4:1995 by the following:*

IEC 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

*Replace the reference to IEC 61000-4-5:1995 by the following:*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

*Add, after IEC 61000-4-6:2003, the following reference:*

Amendment 2 (2006)

*Replace “IEC 61000-5-2:1997” by “IEC/TR 61000-5-2:1997”.*

*Add, after IEC 61008-1:1996, the following reference:*

Amendment 2 (2006)

*Add, after IEC 61009-1:1996, the following reference:*

Amendment 2 (2006)

*Add, after IEC 61009-1:1996, the following reference:*

IEC 61131-1:2003, *Programmable controllers – Part 1: General information*

*Add, after CISPR 11:2003, the following reference:*

Amendment 2 (2006)

*Add, after CISPR 22:2005, the following reference:*

Amendment 2 (2006)

## 2.3

### current-limiting circuit-breaker

*Replace the existing definition by the following:*

circuit-breaker that, within a specified range of current, prevents the let-through current reaching the prospective peak value and which limits the let-through energy ( $I^2t$ ) to a value less than the let-through energy of a half-cycle wave of the symmetrical prospective current

NOTE 1 Reference may be made to either the symmetrical or asymmetrical prospective peak value of let-through current.

NOTE 2 The let-through current is also referred to as the cut-off current (see IEC 441-17-12).