

# SLOVENSKI STANDARD

## SIST EN 60947-3:2009

01-september-2009

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SIST EN 60947-3:2000

SIST EN 60947-3:2000/A1:2002

SIST EN 60947-3:2000/A2:2006

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Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3:2008)

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Niederspannungsschaltgeräte - Teil 3: Lastschalter, Trennschalter, Lasttrennschalter und Schalter-Sicherungs-Einheiten (IEC 60947-3:2008)

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Appareillage à basse tension - Partie 3: Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-fusibles (CEI 60947-3:2008)

Ta slovenski standard je istoveten z: **EN 60947-3:2009**

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**ICS:**

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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**SIST EN 60947-3:2009**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60947-3**

June 2009

ICS 29.120.40; 29.130.20

Supersedes EN 60947-3:1999 + A1:2001 + A2:2005

English version

**Low-voltage switchgear and controlgear -  
Part 3: Switches, disconnectors, switch-disconnectors  
and fuse-combination units  
(IEC 60947-3:2008)**

Appareillage à basse tension -  
Partie 3: Interrupteurs, sectionneurs,  
interrupteurs-sectionneurs  
et combinés-fusibles  
(CEI 60947-3:2008)

Niederspannungsschaltgeräte -  
Teil 3: Lastschalter, Trennschalter,  
Lasttrennschalter  
und Schalter-Sicherungs-Einheiten  
(IEC 60947-3:2008)

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This European Standard was approved by CENELEC on 2009-05-01. 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, 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/1601/FDIS, future edition 3 of IEC 60947-3, 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 EN 60947-3 on 2009-05-01.

This European Standard supersedes EN 60947-3:1999 + A1:2001 + A2:2005.

EN 60947-3:2009 includes the following significant technical changes with respect to EN 60947-3:1999:

- alignment with EN 60947-1:2007;
- a switching operation without current allowed between making and breaking operation (Table 3);
- increased number of operations for AC-23 allowed with agreement of the manufacturer (Table 3);
- simplified test procedure amended, f) added to 8.3.2.1.3;
- temperature rise test shall be made at the rated operational current  $I_e$  instead of the conventional enclosed thermal current  $I_{the}$  (8.3.3.1).

This part is to be used in conjunction with EN 60947-1. The numbering of the subclauses is sometimes not continuous because it is based on EN 60947-1.

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) 2010-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-05-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive EMC (2004/108/EC). See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 60947-3:2008 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60447                      NOTE Harmonized as EN 60447:2004 (not modified).

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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 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 60269 (mod)	Series	Low-voltage fuses	EN/HD 60269	Series
IEC 60410	1973	Sampling plans and procedures for inspection by attributes	-	-
IEC 60417	Data-base	Graphical symbols for use on equipment	-	-
IEC 60947-1	2007	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	2007
IEC 60947-2	2006	Low-voltage switchgear and controlgear - Part 2: Circuit-breakers	EN 60947-2	2006
IEC 60947-4-1 A1	2000	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor starters	EN 60947-4-1	2001
A2	2005	Electromechanical contactors and motor-starters	A2	2005
IEC 60947-5-1	2003	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1 + corr. July	2004 2005
IEC 61000-4-2 A1	1995	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995 <sup>1)</sup>
A2	1998 2000	Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	A1 A2	1998 2001
IEC 61000-4-3 A1	2006 2007	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3 A1 + IS1	2006 2008 2009
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

<sup>1)</sup> EN 61000-4-2 is 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 61000-4-6 + A1 + A2	2003 2004 2006	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6 + corr. August + IS1	2007 <sup>2)</sup> 2007 2009
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 (mod)	2005 2005 2006	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	EN 55022 A1 A2	2006 2007 200X <sup>3)</sup>

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[SIST EN 60947-3:2009](#)

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<sup>2)</sup> EN 61000-4-6 is superseded by EN 61000-4-6:2009, which is based on IEC 61000-4-6:2008.

<sup>3)</sup> At draft stage.

## **Annex ZZ** (informative)

### **Coverage of Essential Requirements of EC Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Article 1 of Annex I of the EC Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

**WARNING:** Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

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IEC 60947-3

Edition 3.0 2008-08

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Low-voltage switchgear and controlgear –  
Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination  
units**

**Appareillage à basse tension –  
Partie 3: Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-  
fusibles**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
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INTERNATIONALE

PRICE CODE  
CODE PRIX

**XA**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

**Part 3: Switches, disconnectors, switch-disconnectors  
and fuse-combination units**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
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International Standard IEC 60947-3 has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This third edition cancels and replaces the second edition published in 1999, Amendment 1 (2001) and Amendment 2 (2005). This edition constitutes a technical revision.

The document 17B/1601/FDIS, circulated to the National Committees as amendment 3, led to the publication of the new edition.

This edition includes the following significant technical changes with respect to the previous edition:

- alignment with the fifth edition of IEC 60947-1;
- a switching operation without current allowed between making and breaking operation (Table 3);
- increased number of operations for AC-23 allowed with agreement of the manufacturer (Table 3);

- simplified test procedure amended, f) added to 8.3.2.1.3;
- temperature rise test shall be made at the rated operational current  $I_e$  instead of the conventional enclosed thermal current  $I_{the}$  (8.3.3.1).

The text of this standard is based on the first edition, its amendment 1, amendment 2 and the following documents:

FDIS	Report on voting
17B/1601/FDIS	17B/1608/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60947 series can be found, under the general title *Low-voltage switchgear and controlgear*, on the IEC website.

This part is to be used in conjunction with IEC 60947-1. The numbering of the subclauses is sometimes not continuous because it is based on IEC 60947-1.

The committee has decided that the contents of this 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 [SIST EN 60947-3:2009](http://standards.iteh.ai/catalog/standards/sist/a8a0eb45-ee72-4a16-85db-1bbdc08ef114/sist-en-60947-3-2009)
- amended. <https://standards.iteh.ai/catalog/standards/sist/a8a0eb45-ee72-4a16-85db-1bbdc08ef114/sist-en-60947-3-2009>

ITEH STANDARD PREVIEW

(standards.iteh.ai)

## LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

### Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

#### 1 General

The provisions of the general rules dealt with in IEC 60947-1 are applicable to this part, where specifically called for. Clauses and subclauses, tables, figures and appendices of the general rules thus applicable are identified by reference IEC 60947-1, e.g., 4.3.4.1 of IEC 60947-1, Table 4 of IEC 60947-1, or Annex A of IEC 60947-1.

##### 1.1 Scope and object

This part of IEC 60947 applies to switches, disconnectors, switch-disconnectors and fuse-combination units to be used in distribution circuits and motor circuits of which the rated voltage does not exceed 1 000 V a.c. or 1 500 V d.c.

The manufacturer shall specify the type, ratings and characteristics according to the relevant standard of any incorporated fuses.

This part does not apply to equipment coming within the scope of IEC 60947-2, IEC 60947-4-1 and IEC 60947-5-1; however, when switches and fuse-combination units coming into the scope of this part are normally used to start, accelerate and/or stop an individual motor they shall also comply with the additional requirements given in Annex A.

<https://standards.iteh.ai/catalog/standards/sist/a8a0eb45-ee72-4a16-85db->

The requirements for single pole operated three pole switches are included in Annex C.

Auxiliary switches fitted to equipment within the scope of this part shall comply with the requirements of IEC 60947-5-1.

This part does not include the additional requirements necessary for electrical apparatus for explosive gas atmospheres.

NOTE 1 Depending on its design, a switch (or disconnector) can be referred to as "a rotary switch (disconnector)", "cam-operated switch (disconnector)", "knife-switch (disconnector)", etc.

NOTE 2 In this part, the word "switch" also applies to the apparatus referred to in French as "commutateurs", intended to modify the connections between several circuits and *inter alia* to substitute a part of a circuit for another.

NOTE 3 In general, throughout this part switches, disconnectors, switch-disconnectors and fuse-combination units will be referred to as "equipment".

The object of this part is to state

- a) the characteristics of the equipment;
- b) the conditions with which the equipment shall comply with reference to
  - 1) operation and behaviour in normal service;
  - 2) operation and behaviour in case of specified abnormal conditions, e.g. short circuit;
  - 3) dielectric properties;
- c) the tests for confirming that these conditions have been met and the methods to be adopted for these tests;

- d) the information to be marked on the equipment or made available by the manufacturer, e.g. in the catalogue.

## 1.2 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 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*  
Amendment 1 (2000)

IEC 60269 (all parts), *Low-voltage fuses*

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60417-DB:2000<sup>1</sup>, *Graphical symbols for use on equipment*

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

IEC 60947-2:2006, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*

IEC 60947-4-1:2000, *Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters*  
Amendment 1 (2002)  
Amendment 2 (2005)

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*  
Amendment 1 (1998)  
Amendment 2 (2000)

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*  
Amendment 1 (2007)

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

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

IEC 61000-4-6:2003, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*  
Amendment 1 (2004)  
Amendment 2 (2006)

CISPR 11:2003, *Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement*

<sup>1</sup> "DB" refers to the IEC on-line database.