

SLOVENSKI STANDARD

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Nizkonapetostne stikalne naprave - 4-1. del: Kontaktorji in motorski zaganjalniki - Elektromehanski kontaktorji in motorski zaganjalniki (IEC 60947-4-1:2009)

Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters (IEC 60947-4-1:2009)

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Niederspannungsschaltgeräte - Teil 4-1: Schütze und Motorstarter - Elektromechanische Schütze und Motorstarter (IEC 60947-4-1:2009)

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Appareillage à basse tension - Partie 4-1: Contacteurs et démarreurs de moteurs - Contacteurs et démarreurs électromécaniques (CEI 60947-4-1:2009)

Ta slovenski standard je istoveten z: EN 60947-4-1:2010

ICS:

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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en,fr

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60947-4-1

April 2010

ICS 29.120.99; 29.130.20

Supersedes EN 60947-4-1:2001 + A1:2002 + A2:2005

English version

**Low-voltage switchgear and controlgear -
Part 4-1: Contactors and motor-starters -
Electromechanical contactors and motor-starters
(IEC 60947-4-1:2009)**

Appareillage à basse tension -
Partie 4-1: Contacteurs et démarreurs
de moteurs -
Contacteurs et démarreurs
électromécaniques
(CEI 60947-4-1:2009)

Niederspannungsschaltgeräte -
Teil 4-1: Schütze und Motorstarter -
Elektromechanische Schütze
und Motorstarter
(IEC 60947-4-1:2009)

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This European Standard was approved by CENELEC on 2010-04-01. 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, Croatia, 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/1674/FDIS, future edition 3 of IEC 60947-4-1, 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 60947-4-1 on 2010-04-01.

This standard is to be used in conjunction with EN 60947-1.

This European Standard supersedes EN 60947-4-1:2001 + A1:2002 + A2:2005.

This EN 60947-4-1 includes the following significant technical changes with respect to the EN 60947-4-1:2001 + A1:2002 + A2:2005:

- deletion of the test at -5 °C and $+20\text{ °C}$ for thermal overload relays that are not compensated for ambient air temperature;
- addition of conditions of the tests according to Annex Q of EN 60947-1;
- EMC tests: clarification of acceptance criteria and alignment with EN 60947-1 for fast transient severity level;
- Annex B, test for Icd: modification of the duration of the dielectric test voltage from 5 s to 60 s;
- Annex B, electrical durability: improvement of the statistical aspects;
- Annex H: clarification and introduction of new extended functions within electronic overload relays;
- Annex K, procedure to determine data for electromechanical contactors used in functional safety applications: creation of this new annex.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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The following dates were fixed:

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|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-01-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2013-04-01 |

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 2004/108/EC. See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60947-4-1:2009 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068-2-2:2007	NOTE	Harmonized as EN 60068-2-2:2007 (not modified).
IEC 60076-1:1993	NOTE	Harmonized as EN 60076-1:1997 (modified).
IEC 60269-1:2006	NOTE	Harmonized as EN 60269-1:2007 (not modified).
IEC 60269-2:2006	NOTE	Harmonized as EN 60269-2:2007 (modified).
IEC 60664-1:2007	NOTE	Harmonized as EN 60664-1:2007 (not modified).
IEC 61095:2009	NOTE	Harmonized as EN 61095:2009 (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 60034-1	2004	Rotating electrical machines - Part 1: Rating and performance	EN 60034-1	2004
IEC 60085	2007	Electrical insulation - Thermal evaluation and designation	EN 60085	2008
IEC 60300-3-5	2001	Dependability management - Part 3-5: Application guide - Reliability test conditions and statistical test principles	-	-
IEC 60410	1973	Sampling plans and procedures for inspection - by attributes	-	-
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 60947-3	2008	Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	EN 60947-3	2009
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	2008	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-6	2008	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2009
IEC 61439-1 (mod)	2009	Low-voltage switchgear and controlgear assemblies - Part 1: General rules	EN 61439-1	2009
IEC 61508	Series	Functional safety of electrical/electronic/programmable electronic safety-related systems	EN 61508	Series
IEC 61511	Series	Functional safety - Safety instrumented systems for the process industry sector	EN 61511	Series
IEC 61513	2001	Nuclear power plants - Instrumentation and control for systems important to safety - General requirements for systems	-	-
IEC 61649	2008	Weibull analysis	EN 61649	2008
IEC 61810-1	2008	Electromechanical elementary relays - Part 1: General requirements	EN 61810-1	2008
IEC 62061	2005	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	EN 62061	2005
CISPR 11 (mod)	2003	Industrial scientific and medical (ISM) radio-	EN 55011	2007
+ A1	2004	frequency equipment - Electromagnetic	-	-
+ A2	2006	disturbance characteristics - Limits and methods of measurement	+ A2 ¹⁾²⁾	2007
ISO 13849-1	2006	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	-	-

¹⁾ EN 55011 includes A1 to CISPR 11 (mod).

²⁾ EN 55011 is superseded by prEN 55011(fragment 1), which is based on CISPR 11:200X (fragment 1)(CISPR/B/440/CDV).

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 Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directives 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 60947-4-1

Edition 3.0 2009-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Low-voltage switchgear and controlgear –
Part 4-1: Contactors and motor-starters – Electromechanical contactors and
motor-starters**

**Appareillage à basse tension –
Partie 4-1: Contacteurs et démarreurs de moteurs – Contacteurs et démarreurs
électromécaniques**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

**Part 4-1: Contactors and motor-starters –
Electromechanical contactors and motor-starters**

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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International Standard IEC 60947-4-1 has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This third edition replaces the second edition published in 2000 and its Amendments 1 (2002) and 2 (2005). It is a technical revision.

This edition includes the following significant technical changes with respect to the previous edition (2000) and its Amendments 1 (2002) and 2 (2005):

- deletion of the test at -5 °C and $+20\text{ °C}$ for thermal overload relays that are not compensated for ambient air temperature;
- addition of conditions of the tests according to Annex Q of IEC 60947-1;
- EMC tests: clarification of acceptance criteria and alignment with IEC 60947-1 for fast transient severity level;
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- Annex B, electrical durability: improvement of the statistical aspects;
- Annex H: clarification and introduction of new extended functions within electronic overload relays;
- Annex K, procedure to determine data for electromechanical contactors used in functional safety applications: creation of this new annex.

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

FDIS	Report on voting
17B/1674/FDIS	17B/1677/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 standard shall be read in conjunction with IEC 60947-1, *Low voltage switchgear and controlgear – Part 1: General rules*. The provisions of the general rules are applicable to this standard, where specifically called for.

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; <https://standards.iteh.ai/catalog/standards/sist/ffea2e27-d3cf-46b1-a36b-dea695a00cd1/sist-en-60947-4-1-2010>
- replaced by a revised edition, or
- amended.

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