

SLOVENSKI STANDARD

SIST EN 60947-5-1:2005/A1:2009

01-september-2009

Nizkonapetostne stikalne in krmilne naprave - 5-1. del: Krmilne naprave in stikalni elementi - Elektromehanske krmilne naprave (IEC 60947-5-1:2003/A1:2009)

Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices (IEC 60947-5-1:2003/A1:2009)

Niederspannungsschaltgeräte - Teil 5-1: Steuergeräte und Schaltelemente - Elektromechanische Steuergeräte (IEC 60947-5-1:2003/A1:2009)

Appareillage à basse tension - Partie 5-1: Appareils et éléments de commutation pour circuits de commande - Appareils électromécaniques pour circuits de commande (CEI 60947-5-1:2003/A1:2009)

<https://standards.iteh.ai/catalog/standards/sist/4fa6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009>

Ta slovenski standard je istoveten z: EN 60947-5-1:2004/A1:2009

ICS:

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60947-5-1/A1

June 2009

ICS 29.120.40; 29.130.20

English version

**Low-voltage switchgear and controlgear -
Part 5-1: Control circuit devices and switching elements -
Electromechanical control circuit devices
(IEC 60947-5-1:2003/A1:2009)**

Appareillage à basse tension -
Partie 5-1: Appareils
et éléments de commutation
pour circuits de commande -
Appareils électromécaniques
pour circuits de commande
(CEI 60947-5-1:2003/A1:2009)

Niederspannungsschaltgeräte -
Teil 5-1: Steuergeräte
und Schaltelemente -
Elektromechanische Steuergeräte
(IEC 60947-5-1:2003/A1:2009)

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This amendment A1 modifies the European Standard EN 60947-5-1:2004; it 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 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/1653/FDIS, future amendment 1 to IEC 60947-5-1:2003, 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 60947-5-1:2004 on 2009-05-01.

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- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2012-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of amendment 1:2009 to the International Standard IEC 60947-5-1:2003 was approved by CENELEC as an amendment to the European Standard without any modification.

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[SIST EN 60947-5-1:2005/A1:2009](https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009)

<https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009>

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

Replace Annex ZA of EN 60947-5-1:2004 by:

<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 60050-446	1983	International Electrotechnical Vocabulary (IEV) - Chapter 446: Electrical relays	-	-
IEC 60068-2-6 + corr. March	1995 1995	Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995 ¹⁾
IEC 60068-2-14 + A1	1984 1986	Environmental testing - Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999
IEC 60068-2-27	1987	Basic environmental testing procedures - Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993 ²⁾
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 60073	2002	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators	EN 60073	2002
IEC 60112	2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
IEC 60255 (mod)	Series	Measuring relays and protection equipment	EN 60255	Series
IEC 60417	Data- base	Graphical symbols for use on equipment	-	-
IEC 60617	Data- base	Graphical symbols for diagrams	-	-
IEC 60947-1	2007	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	2007
IEC 60947-4-1 A1 A2	2000 2002 2005	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters	EN 60947-4-1 A1 A2	2001 2002 2005

¹⁾ EN 60068-2-6 is superseded by EN 60068-2-6:2008, which is based on IEC 60068-2-6:2007.

²⁾ EN 60068-2-27 is superseded by EN 60068-2-27:2009, which is based on IEC 60068-2-27:2008.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60947-5-5 A1	1997 2005	Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function	EN 60947-5-5 A1	1997 2005
IEC 61000-4-2 A1 A2	1995 1998 2000	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2 A1 A2	1995 ³⁾ 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	2006 2008
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	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 61000-4-8 A1	1993 2000	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8 A1	1993 2001
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
IEC 61140 A1 (mod)	2001 2004	Protection against electric shock - Common aspects for installation and equipment	EN 61140 A1	2002 2006
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

³⁾ EN 61000-4-2 is superseded by EN 61000-4-2:2009, which is based on IEC 61000-4-2:2008.



IEC 60947-5-1

Edition 3.0 2009-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

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

**Appareillage à basse tension –
Partie 5-1: Appareils et éléments de commutation pour circuits de commande –
Appareils électromécaniques pour circuits de commande**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

N

ICS 29.120.40; 29.130.20

ISBN 2-8318-1038-2

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/1653/FDIS	17B/1667/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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CONTENTS

Modify the title of Annex D to read: [SIST EN 60947-5-1:2005/A1:2009
https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009](https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009)

Annex D – Vacant

Add the following new annex title:

Annex M (normative) – Terminal marking, distinctive number and distinctive letter for control circuit devices

Add the following new table titles:

Table M.1 – Diagrams of control switches

Table M.2 – Diagrams of contactor relays designated by the distinctive letter E

Table M.3 – Diagrams of contactor relays designated by the distinctive letter Y

FOREWORD

Before the final paragraph that begins "The committee has decided ... " insert the following new paragraph:

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

1.1 Scope and object

Replace the seventh paragraph by the following new text:

This standard does not include the relays covered in IEC 60255 or in the IEC 61810 series, nor automatic electrical control devices for household and similar purposes.

1.2 Normative references

Replace the reference to IEC 60068-2-30:1980 by the following:

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

Insert the following new reference:

IEC 60417, *Graphical symbols for use on equipment*

Replace the reference to IEC 60947-1:1999 by the following:

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

Add, after the reference to IEC 60947-4-1, the following references:

Amendment 1 (2002)

Amendment 2 (2005)

Insert the following new reference:

IEC 60947-5-5:2005, *Low-voltage switchgear and controlgear – Part 5-5: Control circuit devices and switching elements – Electrical emergency stop device with mechanical latching function*

<https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-c24afbd94c1f/sist-en-60947-5-1-2005-a1-2009>

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

IEC 61000-4-3:2008, *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*

Replace IEC 61000-4-6:1996 and its Amendment 1 (2000) by the following:

IEC 61000-4-6:2008, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

Replace the reference to IEC 61000-4-11:1994 by the following:

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

Add, after the reference to IEC 61140, the following reference:

Amendment 1 (2004)

Replace the reference to CISPR 11:1997 by the following:

CISPR 11:2003, *Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement*
Amendment 1 (2004)
Amendment 2 (2006)

5.1 Nature of information

Modify the existing text of item g) as follows:

g) Rated impulse withstand voltage (see 4.3.1.3).

Modify the existing text of item l) as follows:

l) Conditional short-circuit current.

5.2.2 Terminal identification and marking

Replace the text of this subclause as follows:

Subclause 7.1.8.4 of IEC 60947-1 applies.

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5.2.3 Functional markings (standards.iteh.ai)

Add, at the end of this subclause, the following new paragraph:

<https://standards.iteh.ai/catalog/standards/sist/4f1af6b2-430d-4197-bf21-34af904c-f58a/iec-60947-5-1-2005-a1-2009>

Symbols shall be in accordance with IEC 60417.

5.2.4 Emergency stop

Replace the existing text by the following:

Actuator shape and colour, background colour and direction of unlatching for emergency stop devices with mechanical latching function shall be in accordance with 4.2 of IEC 60947-5-5.

5.2.5.2 Terminal markings for operating diagrams

Add, at the end of the existing paragraph, the following new sentence:

See also Annex M.

Table 2 – Mounting hole diameter and dimensions of the key recess (if any)

Replace the word “Taille” in the heading of the first column by the word “Size”.

7.1 Constructional requirements

Replace the orphan text, before 7.1.1, as follows:

Subclause 7.1 of IEC 60947-1 applies except for 7.1.2, 7.1.3, 7.1.7, 7.1.9 and 7.1.13, and with the following additions:

7.1.3 Clearances and creepage distances

Replace the existing text of this subclause by the following:

Minimum values are given in Table 13 and Table 15 of IEC 60947-1.

7.1.4.5 Emergency stop

Replace the existing note by the following new note:

NOTE Additional requirements for emergency stop devices with a latching function are given in IEC 60947-5-5.

7.1.6 Conditions for control switches suitable for isolation

Replace the existing text of the first paragraph by the following new text:

A control switch suitable for isolation shall be manually operated with a direct opening action (see Annex K) and shall comply with the isolating function in the open position (see 2.1.19 and 7.1.7 of IEC 60947-1).

8.3.2.1 General requirements

Replace the existing text of the second paragraph by the following:

The tests shall be performed with the actuator operated by a machine complying with the requirements of 8.3.2.1 a) for linear movement or, for a rotary switch, in accordance with 8.3.2.1 b) or 8.3.2.1 c).

Add, after item b), the following new item c):

- c) For limited movement rotary switches, operation shall be at a speed of 1 to 4 revolutions per second.

8.3.3.5.2 Making and breaking capacities of switching elements under normal conditions

Modify the existing text of the fourth dashed item of the second paragraph as follows:

- 5 000 operations at 10 s intervals (or at a shorter interval determined by the manufacturer).