

SLOVENSKI STANDARD
SIST EN 60947-6-2:1998/A1:1999**01-julij-1999****BUXca Yý U****SIST EN 60947-6-2:1998/A11:1998**

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Low-voltage switchgear and controlgear -- Part 6-2: Multiple function equipment - Control and protective switching devices (or equipment) (CPS)

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Niederspannungsschaltgeräte -- Teil 6-2: Mehrfunktions-Schaltgeräte - Steuer- und Schutz-Schaltgeräte (CPS) **(standards.iteh.ai)**

[SIST EN 60947-6-2:1998/A1:1999](#)

Appareillage à basse tension -- Partie 6-2: Matériels à fonctions multiples - Appareils (ou matériel) de connexion de commande et de protection (ACP)

Ta slovenski standard je istoveten z: EN 60947-6-2:1993/A1:1997

ICS:

29.130.20	Niskonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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SIST EN 60947-6-2:1998/A1:1999 en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60947-6-2/A1

October 1997

UDC 621.316.5.027.2
ICS 29.120.60

Supersedes EN 60947-6-2:1993/A1:1997

Descriptors: Low-voltage switchgear and controlgear, multiple function equipment, control and protective switching devices (CPS)

English version

Low-voltage switchgear and controlgear
Part 6: Multiple function equipment
Section 2: Control and protective switching devices
(or equipment) (CPS)
(IEC 60947-6-2:1992/A1:1997)

Appareillage à basse tension

Partie 6: Matériels à fonctions multiples

Section 2: Appareils (ou matériel) de

connexion de commande et de

protection (ACP)

(CEI 60947-6-2:1992/A1:1997)

Niederspannungsschaltgeräte

Teil 6: Mehrfunktion-Schaltgeräte

Hauptabschnitt 2: Steuer- und

Schutz-Schaltgeräte

(IEC 60947-6-2:1992/A1:1997)

<https://standards.iteh.ai/catalog/standards/sist/44ebb29a-3461-44f7-804b-41b4f3be82d2/sist-en-60947-6-2-1998-a1-1999>

This amendment A1 modifies the European Standard EN 60947-6-2:1993; it was approved by CENELEC on 1997-10-01. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization

Comité Européen de Normalisation Electrotechnique

Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels


Foreword

The text of document 17B/813/FDIS, future amendment 1 to IEC 60947-6-2:1992, 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 60947-6-2:1993 on 1997-10-01.

This amendment supersedes EN 60947-6-2:1993/A1:1997.

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
- latest date by which the national standards conflicting with the amendment have to be withdrawn



REPUBLIKA SLOVENIJA
 MINISTRSTVO ZA VEŠTAČENJE IN TEHNOLOGIJO
 INSTITUT ZA STANDARDIZACIJO
 (dop) 1998-07-01
 INSTITUT ZA STANDARDIZACIJO
 (dow) 1998-07-01

Annexes designated "normative" are part of the body of the standard.
 In this standard, annex ZA is normative.
 Annex ZA has been added by CENELEC.

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Endorsement notice

The text of amendment 1:1997 to the International Standard IEC 60947-6-2:1992 was approved by CENELEC as an amendment to the European Standard without any modification.

[SIST EN 60947-6-2:1998/A1:1999](https://standards.iteh.ai/catalog/standards/sist/44ebb29a-3461-44f7-804b-41b4f3be82d2/sist-en-60947-6-2-1998-a1-1999)

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Annex ZA (normative)

Normative references to international publications
with their corresponding European publications

Addition:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-1	1992	Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 1: Overview of immunity tests Basic EMC publication	EN 61000-4-1	1994
IEC 61000-4-2	1995	Section 2: Electrostatic discharge immunity test - Basic EMC publication	EN 61000-4-2	1995
IEC 61000-4-3 (mod)	1995	Section 3: Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	1996
IEC 61000-4-4	1995	Section 4: Electrical fast transient/burst immunity test - Basic EMC publication	EN 61000-4-4	1995
IEC 61000-4-5	1995	Section 5: Surge immunity test	EN 61000-4-5	1995
IEC 61000-4-6	1996	Section 6: Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	1996
CISPR 11 (mod)	1990	Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011 ¹⁾	1991

1) The title of EN 55011:1991 is: Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

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60947-6-2

1992

AMENDEMENT 1
AMENDMENT 1

1997-09

Amendement 1

Appareillage à basse tension –

Partie 6:

Matériels à fonctions multiples –

Section 2: Appareils (ou matériel) de connexion
de commande de protection (ACP)

[SIST EN 60947-6-2:1998/A1:1999](https://standards.iteh.ai/catalog/standards/sist/44ebb29a-3461-44f7-804b-41b4250c02d2/sist-en-60947-6-2-1998-a1-1999)

<https://standards.iteh.ai/catalog/standards/sist/44ebb29a-3461-44f7-804b-41b4250c02d2/sist-en-60947-6-2-1998-a1-1999>

Amendment 1

Low-voltage switchgear and controlgear –

Part 6:

Multiple function equipment –

Section 2: Control and protective switching
devices (or equipment) (CPS)

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

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Pour prix, voir catalogue en vigueur
For price, see current catalogue

FOREWORD

This amendment has been prepared by the 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/813/FDIS	17B/849/RVD

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

Page 3

CONTENTS

Add, on page 5, the title of the following new subclause:

8.3 Electromagnetic compatibility (EMC)

Add, on page 7, the titles of the following new subclauses:

9.3.5 Performance under EMC tests

9.4.8 Test sequence VIII: EMC

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2 Normative references

Add, to the existing list, the titles of the following standards:

IEC 61000-4-1:1992, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 1: Overview of immunity tests – Basic EMC publication*

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test – Basic EMC publication*

IEC 61000-4-3:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 3: Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/burst immunity test – Basic EMC publication*

IEC 61000-4-5:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 5: Surge immunity tests*

IEC 61000-4-6:1996 *Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques – Section 6: Immunity to conducted disturbances, induced by radio-frequency fields*

CISPR 11:1990, *Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment*

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6.1.2 Characteristics

Add, on page 33, after item u), the following two new items:

- v) Environment 1 or 2 (see 8.3.1).
- w) Special requirements if applicable, for example shielded or twisted conductors.

NOTE – Unshielded or untwisted conductors are considered as normal installation conditions.

Page 33

6.3 Instructions for installation, operation and maintenance

Add, after the existing sentence, the following new sentence:

Information shall be provided by the manufacturer to advise the user on the measures to be taken with regard to the CPS, if any, concerning EMC.

Page 41

Move figure 1 before annex A, page 95.

Page 59

Add, after 8.2.6, the following new subclauses:

8.3 Electromagnetic compatibility (EMC)

8.3.1 General

Subclause 7.3.1 of part 1 applies with the following addition:

Power frequency magnetic field tests are not required because such devices are naturally submitted to such fields. Immunity is demonstrated by the successful completion of the operating capability tests (see 9.3.3.5 and 9.3.3.6).

8.3.2 Immunity

The test results are specified using the performance criteria of IEC 61000-4-1 as listed below:

- 1) Normal performance within the specification limits.
- 2) Temporary degradation or loss of function or performance which is self-recoverable.
- 3) Temporary degradation or loss of function or performance which requires operator intervention or system reset. Normal functions shall be restorable by simple intervention, for example by manual reset or restart. There shall not be any damaged component.

Table 16 – Specific acceptance criteria for immunity tests

Item	Acceptance criteria		
	1	2	3
Operation of power and control circuits	No mal-operation	Temporary mal-operation which cannot cause tripping; unintentional separation or closure of contact is not accepted Self-recoverable	Tripping of overload relay; unintentional separation or closure of contacts
Operation of displays and auxiliary circuits	No change to visible display information Only slight light intensity fluctuations of LEDs or movement of characters	Temporary visible changes e.g. unwanted LED illumination No mal-operation of auxiliary contacts	Permanent loss of display information Mal-operation of auxiliary contacts

8.3.2.1 *Equipment not incorporating electronic circuits*

Subclause 7.3.2.1 of part 1 applies.

8.3.2.2 *Equipment incorporating electronic circuits*

Subclause 7.3.2.2 of part 1 applies.

The test values and procedures are given in 9.3.5.2

8.3.3 *Emission*

8.3.3.1 *Equipment not incorporating electronic circuits*

Subclause 7.3.3.1 of part 1 applies.

8.3.3.2 *Equipment incorporating electronic circuits*

Subclause 7.3.3.2 of part 1 applies.

The test values and procedures are given in 9.3.5.3.

Page 75

Add, after 9.3.4.1.8, the following new subclauses:

9.3.5 EMC tests

9.3.5.1 General

Subclauses 8.3.2.1, 8.3.2.3 and 8.3.2.4 of part 1 apply with the following additions:

With the agreement of the manufacturer, more than one EMC test or all EMC tests may be conducted on one and the same sample, which initially may be new, or may have passed test sequences according to 9.3.1. The sequence of the EMC tests may be any convenient.

Unless otherwise stated in this standard or specified by the manufacturer, performance criterion 2 applies and it shall be noted in the test report.

Unless otherwise specified in the relevant clause, after the tests, the operating limits of 9.3.3.2 and if applicable 8.2.1.5.1 shall be verified.

The test report shall also include any special measures that have been taken to achieve compliance, for example the use of shielded or special cables. If auxiliary equipment is used with the device in order to comply with immunity or emission requirements, they shall be included in the report.

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Unless otherwise specified in the relevant clauses, the test sample shall be in the open or closed position, whichever is worse, and shall be operated with the rated control supply.

<https://standards.iteh.ai/catalog/standards/sist/44ebb29a-3461-44f7-804b-315f1998a199>

According to their utilization category and to their over-current protection, CPSs incorporating electronic circuits shall be grouped into the following utilization groups, and tested accordingly:

- Utilization Group A for CPSs of utilization categories AC-40, AC-41, AC-45a, AC-45b, DC-40, DC-41 and DC 46, not provided with electronic over-current protection, and for all CPSs of utilization categories AC-42, AC-43, AC-44, DC-43 and DC-45.
- Utilization Group B for CPSs of utilization categories AC-40, AC-41, AC-45a, AC-45b, DC-40, DC-41 and DC-46, provided with electronic over-current protection.

9.3.5.2 Immunity

The tests of table 23 of part 1 are required. Special requirements are specified in 9.3.5.2.1 to 9.3.5.2.6. If during the EMC-tests conductors are to be connected to the test sample, the cross-section and the type of conductors are optional but shall be in accordance with the manufacturer's literature.

9.3.5.2.1 Electrostatic discharge

The test shall be conducted using the methods of IEC 61000-4-2. Except for metallic parts for which contact discharge is made, only air discharge is required. 10 positive and 10 negative pulses shall be applied to each selected point, the time interval between each successive single discharge being 1 s. Terminals are not required to be tested.