

SLOVENSKI STANDARD
SIST EN 60947-5-1:1995/A12:1998
01-junij-1998

Low-voltage switchgear and controlgear assemblies - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices - Amendment A12

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

Niederspannungsschaltgeräte -- Teil 5: Steuergeräte und Schaltelemente -- Hauptabschnitt 1: Elektromechanische Steuergeräte

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

Ta slovenski standard je istoveten z: EN 60947-5-1:1991/A12:1997

ICS:

29.130.20	Niskonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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EUROPEAN STANDARD

EN 60947-5-1/A12

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1997

UDC 621.316.542:621.3.027.2:620.1
ICS 29.120.60

Descriptors: Low-voltage switchgear and controlgear, electromechanical control circuit devices, characteristics, tests

English version

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

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

Niederspannung-Schaltgeräte
 Teil 5: Steuergeräte und Schaltelemente
 Hauptabschnitt 1: Elektromechanische
 Steuergeräte

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This amendment A12 modifies the European Standard EN 60947-5-1:1991; it was approved by CENELEC on 1996-07-02. 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

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Ref. No. EN 60947-5-1:1991/A12:1997 E

Foreword

This amendment was prepared by the Technical Committee CENELEC TC 17B, Low-voltage switchgear and controlgear including dimensional standardization.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A12 to EN 60947-5-1:1991 on 1996-07-02.

NOTE: There is no amendment A11 to EN 60947-5-1. The document which was originally so ratified was redesignated EN 60947-5-4.

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) 1997-10-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1997-10-01

This amendment covers the requirements of EMC for electromechanical control circuit devices. It contains additional requirements corresponding to subclause 7.3 of EN 60947-1.

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Contents

Add the titles of the new subclauses in chapter 1 as follows :

7.3 Electromagnetic compatibility (EMC)

8.4 EMC tests

Add in chapter 1 the following new subclause 7.3 :

7.3 *Electromagnetic compatibility (EMC)*

7.3.1 *Immunity*

7.3.1.1 *Control circuit devices not incorporating electronic circuits*

Control circuit devices not incorporating electronic circuits are not sensible to electromagnetic disturbances in normal service conditions and therefore no immunity tests are required.

7.3.1.2 *Control circuit devices incorporating electronic circuits*

Control circuit devices incorporating electronic circuits shall have a satisfactory immunity to electromagnetic disturbances.

See 8.4 for the tests and performance criteria appropriate to verify the compliance with these requirements.

NOTE : A simple rectifier is not sensitive to electromagnetic disturbances in normal service conditions and does not therefore require immunity test.

7.3.2 *Emission*

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7.3.2.1 *Control circuit devices not incorporating electronic circuits*

For control circuit devices not incorporating electronic circuits, electromagnetic disturbances can only be generated by control circuit devices during occasional switching operations. The duration of the disturbances is of the order of milliseconds.

The frequency, the level and the consequences of these emissions are considered as part of the normal electromagnetic environment of low-voltage installations.

Therefore the requirements for electromagnetic emission are deemed to be satisfied and no verification is necessary.

7.3.2.2 *Control circuit devices incorporating electronic circuits*

Control circuit devices incorporating electronic circuits (e.g. chopped supply, circuits incorporating microprocessors with high frequency clocks) may generate continuous electromagnetic disturbances.

Emission shall fulfil the requirements of Class A Group 1 of EN 55011 (identical to those of EN 50081-2).

Measurement shall be made in the operating mode, including grounding conditions, producing the highest emission in the frequency band being investigated which is consistent with normal service condition (see clause 6).

Each measurement shall be performed in defined and reproducible conditions.

Table VII gives limits for control circuit devices.

Table VII: Emission limits for control circuit devices

Port	Frequency range	Limits	Standard
Enclosure ¹⁾	30 ... 230 MHz	30 dB ($\mu\text{V}/\text{m}$) quasi peak measured at 30m distance ²⁾	EN 55011
	230 ... 1000 MHz	37 dB ($\mu\text{V}/\text{m}$) quasi peak measured at 30m distance ²⁾	
A.C. power	0,15 ... 0,5 MHz	79 dB (μV) quasi peak 66 dB (μV) average	Class A Group 1
	0,5 ... 5 MHz	73 dB (μV) quasi peak 60 dB (μV) average	
	5 ... 30 MHz	73 dB (μV) quasi peak 60 dB (μV) average	

1) Applicable only for control circuit devices containing parts operating at frequency greater than 9 kHz, e.g. microprocessors.

2) May also be measured at 10 meters distance using the limits increased by 10 dB, or at 3 meters distance using the limits increased by 20 dB.

These limits are given for control circuit devices exclusively used in industrial environment; When they may be used in domestic environment, the following warning shall be included in the instructions for use :

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Warning

This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

However this warning is not necessary when emission limits given in EN 50081-1 are fulfilled.

Add in chapter 1 the following new subclause 8.4 :

8.4 EMC tests

Subclause 8.4 of part 1 (EN 60947-1:1991/A11:1994) applies with the following addition :

During tests, the performance criteria B applies, that means :

- Unintentional separation or closing of contacts shall not occur.
- Any other temporary abnormal operation, including temporary visible change (e.g. unwanted LED illumination) may be accepted if such operation cannot cause tripping and is self recoverable.

Annex ZA (normative)

Other International publications quoted in this standard
with the references of the relevant European publications

Add:

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
		Electromagnetic compatibility Generic emission standard -- Part 1: Residential, commercial and light industry	EN 50081-1	1992
CISPR 11 (mod)	1990	Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011	1991

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**NORME
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60947-5-1

1997

AMENDEMENT 1
AMENDMENT 1
1999-04

Amendement 1

Appareillage à basse tension –

**Partie 5: Appareils et éléments de commutation
pour circuits de commande –**

**Section 1: Appareils électromécaniques
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Amendment 1

Low-voltage switchgear and controlgear –

**Part 5: Control circuit devices
and switching elements –**

**Section One: Electromechanical control
circuit devices**

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