

**SLOVENSKI STANDARD**  
**SIST EN 60947-5-1:2000/A12:2000**  
**01-junij-2000**

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**Nizkonapetostne stikalne in krmilne naprave – 5-1. del: Krmilne naprave in stikalni elementi – Elektromehanske krmilne naprave – Dopolnilo A12**

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

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

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

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**Ta slovenski standard je istoveten z: EN 60947-5-1:1997/A12:1999**

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**ICS:**

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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English version

**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

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

This amendment A12 modifies the European Standard EN 60947-5-1:1997; it was approved by CENELEC on 1999-10-01. 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, Czech Republic, 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

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 formal vote and was approved by CENELEC as amendment A12 to EN 60947-5-1:1997 on 1999-10-01.

This amendment replaces amendment A11:1997 to EN 60947-5-1:1997.

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 (dop) 2000-10-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2002-10-01

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 :

7.3 Electromagnetic compatibility (EMC)

8.4 EMC tests

Add 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*

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).

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Each measurement shall be performed in defined and reproducible conditions.

Table 7 gives limits for control circuit devices.

**Table 7: Emission limits for control circuit devices**

Port	Frequency range	Limits	Standard
Enclosure <sup>1)</sup>	30 ... 230 MHz	30 dB (µV/m) quasi peak measured at 30 m distance <sup>2)</sup>	EN 55011
	230 ... 1000 MHz	37 dB (µV/m) quasi peak measured at 30 m distance <sup>2)</sup>	
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 m distance using the limits increased by 10 dB, or at 3 m distance using the limits increased by 20 dB.

These limits are given for control circuit devices incorporating electronic circuits exclusively used in industrial environment (environment 2 as defined in part 1).

Equipment of this type (class A), for which exists a likelihood of use outside the industrial environment, shall have the following warning in their instructions for use:

**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.

This standard provides also the option for some particular devices to comply with the emission limits as given in Table 18 of part 1 (identical to EN 50081-1). In such a case the warning is not required.

Add the following new subclause 8.4 :

**8.4 EMC tests**

Subclause 8.4 of part 1 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)**

**Normative references to international publications  
with their corresponding European publications**

Add:

<u>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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