



SLOVENSKI STANDARD

SIST EN 50130-4:1997

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Alarmni sistemi - 4. del: Elektromagnetna združljivost - Standard za varnost proizvodov - Zahteve za odpornost sestavnih komponent požarnih, vlomnih in socialnih alarmnih sistemov

Alarm systems -- Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

Alarmanlagen -- Teil 4: Elektromagnetische Verträglichkeit - Produktfamilienorm: Anforderungen an die Störfestigkeit von Anlageteilen für Brand- und Einbruchmeldeanlagen sowie Personen-Hilferufanlagen

Systèmes d'alarme -- Partie 4: Compatibilité électromagnétique - Norme famille de produit: Prescriptions relatives à l'immunité des composants de systèmes de détection d'incendie, d'intrusion et d'alarme sociale

Ta slovenski standard je istoveten z: EN 50130-4:1995

ICS:

13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
33.100.20	Imunost	Immunity

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50130-4

December 1995

ICS 13.320; 29.020

Descriptors: Warning systems, fire detection systems, fire intruder, electromagnetic compatibility, radio disturbances, tests, electrostatic discharge tests, testing conditions, acceptability

English version

Alarm systems
Part 4: Electromagnetic compatibility
Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

Systèmes d'alarme

Partie 4: Compatibilité

électromagnétique

Norme famille de produit: Prescriptions

relatives à l'immunité des composants

de systèmes de détection d'incendie,

d'intrusion et d'alarme sociale

Alarmanlagen

Teil 4: Elektromagnetische

Verträglichkeit

Produktfamillennorm: Anforderungen an

die Störfestigkeit von Anlageteilen für

Brand- und Einbruchmeldeanlagen sowie

Personen-Hilferufanlagen

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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, 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 European Standard was prepared by the CENELEC Technical Committee TC 79, Alarm systems, in cooperation with CEN Technical Committee TC 72, Fire detection and fire alarm systems.

This standard is part of the EN 50130 series of standards. This series of standards is intended to give the requirements applicable to alarm systems in general (e.g. the EMC immunity requirements, in this case). The following associated series of European standards are intended to give the other requirements (e.g. performance requirements), which are applicable to the specific types of alarm systems:

- EN 50131 Alarm systems - Intrusion alarm systems;
- EN 50132 Alarm systems - CCTV surveillance systems;
- EN 50133 Alarm systems - Access control systems;
- EN 50134 Alarm systems - Social alarm systems;
- EN 50135 Alarm systems - Hold-up alarm systems;
- EN 50136 Alarm systems - Alarm transmission systems;
- EN 50137 Alarm systems - Combined or integrated alarm systems;
- EN 54 Fire detection and fire alarm systems.

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The draft of this standard was submitted to the CENELEC Unique Acceptance Procedure in October 1994 and was approved by CENELEC as EN 50130-4 on 1995-07-04.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-01-01

During the transitional period starting on 1996-01-01 and ending on 2001-01-01, manufacturers shall either refer to the generic standards EN 50082-1 or EN 50082-2, or refer to the product family standard EN 50130-4 excluding conflicting national standards, or showing conformity to immunity requirements of apparatus used in alarm systems in the framework of the EMC Directive 89/336/EEC.

After 2001-01-01, EN 50130-4 will be the only standard which can be used.

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1 Scope

This EMC product-family standard, for immunity requirements, applies to the components of the following alarm systems, intended for use in and around buildings in residential, commercial, light industrial and industrial environments:

- Intruder alarm systems;
- Hold-up alarm systems;
- Fire detection and fire alarm systems;
- Social alarm systems;
- CCTV systems, for security applications;
- Access control systems, for security applications.

The tests and severities to be used are the same for indoor and outdoor applications of fixed, movable and portable equipment.

The levels do not cover extreme cases, which may occur in any location, but with an extremely low probability of occurrence, or in special locations close to powerful emitters (e.g. radar transmitters)

Equipment within the scope of this standard should be designed in order to operate satisfactorily in the environmental electromagnetic conditions of residential, commercial, light industrial and industrial environments. This implies particularly that it should be able to operate correctly within the conditions fixed by the electromagnetic compatibility levels for the various disturbances on the low voltage public supply system as defined by ENV 61000-2-2. The Immunity tests in this standard only concern the most critical disturbance phenomena.

For equipment using radio signalling, mains signalling or with connections to the public telephone system, additional requirements, from other standards specific to these signalling media, might apply. For the requirements applicable to radio links, reference should be made to the applicable ETSI standard, in accordance with the agreement between ETSI and CENELEC.

This standard does not specify basic safety requirements, such as protection against electrical shocks, unsafe operation, insulation coordination and related dielectric tests.

This standard does not cover EMC emission requirements. These are covered by other appropriate standards.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies:

<u>IEC Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
-	-	Electromagnetic compatibility - Basic immunity standard - Conducted disturbances induced by radio-frequency fields - Immunity test	ENV 50141	1993
IEC 68-1	1988	Environmental testing - Part 1: General and guidance	EN 60068-1	1994
IEC 1000-2-2 (mod.)*)	1990	Electromagnetic compatibility (EMC) Part 2: Environment Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	ENV 61000-2-2	1993
IEC 1000-4-2	1995	Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test	EN 61000-4-2	1995
IEC 1000-4-3	1995	Section 3: Radiated, radio-frequency, electromagnetic field immunity test	-	-
IEC 1000-4-4	1995	Section 4: Electrical fast transient/burst immunity test	EN 61000-4-4	1995
IEC 1000-4-5	1995	Section 5: Surge immunity test	EN 61000-4-5	1995
IEC 1000-4-11	1994	Section 11: Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	1994
-	-	Radio Equipment and System (RES) General Electro-Magnetic Compatibility (EMC) for radio equipment	prETS 300339	March 1994

*) The text of IEC 1000-2-2:1990 was adopted as the European Prestandard ENV 61000-2-2 with agreed common modifications to clause 7.

3 Definitions and abbreviations

For the purposes of this standard the following definitions and abbreviations apply:

3.1 Definitions

3.1.1 European product performance standard : A European standard (EN), which specifies the product performance requirements. Such a standard may include EMC requirements but is not limited to EMC requirements. (e.g. EN54 series for fire alarm systems, EN 50131 series for intruder alarm systems).

3.1.2 basic EMC standards: Standards giving the description of, and test and measurement methods for an EMC phenomenon, along with details of the test apparatus and test set-up. Although they may give guidance on the choice of severity, they do not give the prescribed limits or criteria for compliance.

3.1.3 intruder alarm system: An alarm system to detect and indicate the presence, entry or attempted entry of an intruder into supervised premises.

3.1.4 fire detection and fire alarm system: An alarm system to detect the presence of fire in supervised premises and to raise the appropriate alarm.

3.1.5 hold-up alarm system: An alarm system designed to permit the deliberate creation of an alarm condition in the case of a hold-up.

3.1.6 social alarm system: An alarm system, providing facilities to summon assistance, for use by persons, who can be considered to be living at risk.

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3.2 Abbreviations

EUT: Equipment under test.

EMC: Electromagnetic compatibility.

CW: Continuous wave [Carrier wave].

4 Application of the tests

The tests shall be carried out as single tests, as described in the later clauses, and the equipment shall meet the criteria for compliance for each test. If a number of tests are made on a single specimen of the equipment, the sequence of testing is optional, and it is permissible to substitute the intermediate functional tests with a reduced version of the functional test and to conduct a full functional test at the end of the sequence. However it should be noted that, in this case, in the event of a failure, it may not be possible to identify which test exposure caused the failure.

Where appropriate basic EMC standards exist, these are referred to in the relevant clauses. The content of these basic EMC standards (ie. the description of the test procedure, test apparatus and test set-up) are not repeated here in full, however modifications or additional information needed for the particular application of the tests are given in this standard.

It may be determined, from consideration of the electrical characteristics and usage of particular equipment, that some of the tests are inappropriate and therefore unnecessary. In such a case it is required that the decision not to conduct the test be recorded in the report, along with the justification for this decision.

5 Conditions during testing

5.1 Configuration

If the EUT is part of a system, or can be connected to other equipment, then the EUT shall be tested while connected in at least the minimum configuration necessary for verifying its performance.

If the EUT has a large number of inputs/outputs, then a sufficient number shall be selected to simulate actual operating conditions and to ensure that all the different types of inputs/outputs are covered.

During conditioning the EUT shall be monitored to detect any change in its status, including any change in outputs, which could be interpreted by associated equipment as a change in status.

5.2 Environmental conditions

Unless otherwise indicated in the basic standard or test procedure, the tests shall be carried out within the rated supply voltage for the EUT and the following standard atmospheric conditions for measurements and tests, as specified in IEC 68-1, subclause 5.3.1:

- Temperature : 15°C to 35°C;
- Relative Humidity : 25% to 75%;
- Air Pressure : 86 kPa to 106 kPa.

5.3 Operating condition

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Where a relevant European product performance standard (EN) exists, which defines suitable operating condition(s) during environmental or EMC tests, exists (e.g. EN 54 series for fire alarm systems, EN 50131 series for intruder alarm systems), the operating condition(s) of the EUT, during the test conditioning, shall be as defined in that standard.

Where no relevant European product performance standard (EN) exists, the operating condition(s) of the EUT, during the test conditioning, shall include at least that corresponding to the main functional mode (appropriate to the test being undertaken) of the system, which it forms part of. (e.g. corresponding to the "set" mode, for an intruder alarm system during a radiated immunity test).

NOTE: The configuration and mode(s) of operation during the tests shall be precisely noted in the test report.

6 Functional test

The variety and the diversity of the equipment within the scope of this standard makes it difficult to define a precise functional test for evaluation of the EUT performance:

- Where a relevant European product performance standard (EN), which defines a suitable functional test for assessing the performance of the EUT before and after environmental or EMC tests, exists (e.g. EN 54 series for fire alarm systems, EN 50131 series for intruder alarm systems) the functional test to be applied and its acceptance criteria shall be as defined in that standard;
- Where no relevant European product performance standard (EN) exists, the functional test shall be at least a test or measurement of the main function(s) of the equipment. The acceptance criteria for this functional test shall be that there is no change in the functioning of the equipment and no significant change in any measurement (e.g. sensitivity of a detector), which shall also remain within specification.

7 Mains supply voltage variations

7.1 Object of the test

To demonstrate the ability of the equipment to function correctly over the anticipated range of mains supply voltage conditions.

7.2 Principle

The test consists of exposing the specimen to each of the maximum and minimum power supply conditions, for a sufficient time to obtain temperature stability, and to perform the functional test.

7.3 Test procedure

7.3.1 General

No reference can be made to an internationally accepted standard at present.

7.3.2 Initial examination

Before the conditioning, subject the specimen to the functional test (see clause 6).

7.3.3 State of specimen during conditioning

Connect the specimen to suitable power supply, monitoring and loading equipment (see 5.1). The specimen shall be in its operating condition (see 5.3).

7.3.4 Conditioning

Subject the specimen to each of the power supply conditions, indicated in table 1, until temperature stability is reached:

Table 1

Supply voltage max (U_{\max})	$U_{\text{nom}}^{1)} + 10\%$
Supply voltage min (U_{\min})	$U_{\text{nom}}^{1)} - 15\%$
<p>¹⁾ U_{nom} = Nominal mains voltage. Where provision is made to adapt the equipment to suit a number of nominal supply voltages (e.g. by transformer tap changing), the above conditioning severity shall be applied for each nominal voltage, with the equipment suitably adapted. For equipment which is claimed to be suitable for a range of nominal mains voltages (e.g. 220/240 V) without adaptation, $U_{\max} = (\text{Maximum } U_{\text{nom}}) + 10\%$, and $U_{\min} = (\text{Minimum } U_{\text{nom}}) - 15\%$. In any case the range of U_{nom} must include the European nominal mains voltage of 230 V.</p>	

7.3.5 Measurements during conditioning

Monitor the specimen during the conditioning to detect any change in status. When temperature stability has been obtained, at each of the supply conditions, subject the specimen to the functional test (see clause 6).

7.3.6 Final measurements

After the conditioning at both of the specified power supply conditions inspect the specimen visually for mechanical damage.

7.4 Criteria for compliance

There shall be no damage, malfunction or change of status due to the different supply voltage conditions.

The EUT shall meet the acceptance criteria for the functional test (see clause 6), during the conditioning.

8 Mains supply voltage dips and short interruptions

8.1 Object of the test

To demonstrate the immunity of the equipment to short duration dips (reductions) and interruptions in the A.C. mains voltage, such as those caused by load switching and operation of protection devices on the mains distribution network.

8.2 Principle

The test consists of applying short duration dips and interruptions to the A.C. mains supply to the equipment.

8.3 Test procedure

8.3.1 General

The test apparatus and procedure shall be as described in IEC 1000-4-11:1994.

8.3.2 Initial examination

Before the conditioning, subject the specimen to the functional test (see clause 6).

8.3.3 State of specimen during conditioning

Connect the specimen to suitable power supply, monitoring and loading equipment (see 5.1). The specimen shall be in its operating condition (see 5.3).

8.3.4 Conditioning

Reduce the A.C. mains supply voltage from the nominal value by the following reductions for the specified periods, in accordance with table 2. The voltage changes shall occur at the zero crossings of the voltage wave.

Table 2

Voltage reduction (%)	60	100
Duration of reduction (No. of periods) (i.e. cycles of the voltage wave)	0,5; 1; 5 & 10	0,5; 1 & 5
Number of reductions at each duration	3	3
Interval between reductions (s)	≥ 10	≥ 10

8.3.5 Measurements during conditioning

Monitor the specimen during the conditioning period to detect any change in status.

8.3.6 Final measurements

After the conditioning, subject the specimen to the functional test (see clause 6), and inspect it visually for mechanical damage.

8.4 Criteria for compliance

There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

The EUT shall meet the acceptance criteria for the functional test (see clause 6), after the conditioning.