



# SLOVENSKI STANDARD

## SIST EN 54-4:1997/A2:2006

01-november-2006

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### Sistemi za odkrivanje in javljanje požara ter alarmiranje - 4. del: Oprema za napajanje

Fire detection and fire alarm systems - Part 4: Power supply equipment

Brandmeldeanlagen - Teil 4: Energieversorgungseinrichtungen

Systemes de détection et d'alarme incendie - Partie 4 : Equipement d'alimentation électrique

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Ta slovenski standard je istoveten z: **EN 54-4:1997/A2:2006**

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#### **ICS:**

13.220.20	Požarna zaščita	Fire protection
13.320	Alarmni in opozorilni sistemi	Alarm and warning systems

**SIST EN 54-4:1997/A2:2006**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 54-4:1997/A2**

August 2006

ICS 13.220.20

English Version

## Fire detection and fire alarm systems - Part 4: Power supply equipment

Systèmes de détection et d'alarme incendie - Partie 4 :  
Équipement d'alimentation électrique

Brandmeldeanlagen - Teil 4:  
Energieversorgungseinrichtungen

This amendment A2 modifies the European Standard EN 54-4:1997; it was approved by CEN on 3 May 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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#### **Amendments to Contents:**

**In 9.9** "Electrostatic discharges (operational)" **is deleted and replaced with:** "Electromagnetic compatibility (EMC) immunity tests (operational)".

**Delete "9.10** Radiated electromagnetic interference (operational)" **and replace with:** "9.10 (deleted)."

**Delete "9.11** Voltage transients – fast transient bursts (operational)" **and replace with:** "9.11 (deleted)."

**Delete "9.12** Voltage transients – slow high energy transients (operational)" **and replace with:** "9.12 (deleted)."

**Delete "9.13** Mains voltage dips and interruptions (operational)" **and replace with:** "9.13 (deleted)."

## Foreword

This document (EN 54-4:1997/A2:2006) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

This Amendment to the European Standard EN 54-4:1997 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by August 2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Amendment 2 to this standard improves the additional requirements for integrated power supplies and makes a number of miscellaneous changes, to correct errors and better reflect the current state of the art. It also replaces the descriptions of the individual electromagnetic compatibility immunity tests with a reference to the EMC Product Family standard EN 50130-4, makes editorial changes to generally improve clarity and updates the normative references.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## Introduction

This Amendment is intended to:

- a) add requirements for power supply equipment integrated in other fire alarm products and to bring them into line with current practice;
- b) bring the EMC immunity requirements specified in EN 54-4:1997 up to date and in line with the EMC Product Family standard for alarm systems;
- c) make a number of miscellaneous changes to correct errors and better reflect current practice;
- d) make editorial changes to improve clarity;
- e) update the normative references.

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## Foreword

### **Replace Date of Withdrawal to read:**

August 2009

## 1 Scope

### **Delete the contents of the Scope and replace with the following text:**

This European Standard specifies requirements, methods of test and performance criteria for power supply equipment of fire detection and fire alarm systems installed in buildings. This includes component L of Figure 1 of EN 54-1:1996 and power supply equipment that supplies power directly to components other than the control and indicating equipment, unless otherwise specified in other Parts of EN 54.

## 2 Normative references

In Clause 2 delete the list of references starting from “EN 54 Fire detection and fire alarm system” and until the end of the clause and replace it with the following:

EN 54-1:1996, *Fire detection and fire alarm systems — Part 1: Introduction*

EN 54-2:1997, *Fire detection and fire alarm systems — Part 2: Control and indicating equipment*

EN 54-7:2000, *Fire detection and fire alarm systems - Part 7: Smoke detectors - Point detectors using scattered light, transmitted light or ionization*

EN 50130-4:1995, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems*

EN 60068-1:1994, *Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + corr. October 1988 + A1:1992)*

EN 60068-2-1:1993, *Environmental testing; part 2: tests; tests A: cold (IEC 60068-2-1:1990)*

EN 60068-2-6:1995, *Environmental testing - Part 2: Tests - Tests Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995 + Corrigendum 1995)*

EN 60068-2-47:2005, *Environmental testing - Part 2-47: Test Mounting of specimens for vibration, impact and similar dynamic tests (IEC 60068-2-47:2005)*

EN 60068-2-75:1997, *Environmental testing — Part 2-75: Tests — Test Eh: Hammer tests (IEC 60068-2-75:1997)*

EN 60068-2-78:2001, *Environmental testing — Part 2-78: Tests, Test Cab: Damp heat, steady state (IEC 60068-2-78:2001)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN 60721-3-3:1995, *Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations (IEC 60721-3-3:1994)*

### 3 Terms, definitions and abbreviations

*In 3.1 replace the text with:*

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 54-1:1996 and the following apply.

##### 3.1.1

##### **final voltage**

lowest voltage, specified by the battery manufacturer, to which a battery should be discharged

##### 3.1.2

##### **fully charged voltage**

highest voltage which characterises a fully charged battery as specified by the battery manufacturer

##### 3.1.3

##### **I max. a**

rated maximum output current which can be supplied continuously

##### 3.1.4

##### **I max. b**

rated maximum output current higher than I max. a, which can be supplied while battery charging is not required

##### 3.1.5

##### **integrated PSE**

PSE within other equipment where it is not possible for the manufacturer to specify the output voltage range(s) of the PSE and the input voltage range(s) of that equipment and where its repair involves replacement of a part or the whole of the other equipment

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*In 3.2 and throughout the text, replace 'p.s.e.' with 'PSE' and 'c.i.e' with 'CIE'.*

### 4 General requirements

*In 4.2 replace the text with:*

#### 4.2 Power sources

- 4.2.1** The PSE shall have at least two power sources, a main power source and a standby power source.
- 4.2.2** The main power source shall be designed to operate from the public electricity supply or equivalent system.
- 4.2.3** At least one standby power source shall be a rechargeable battery.
- 4.2.4** The PSE shall include charging equipment to charge the battery and maintain it in a fully charged state.
- 4.2.5** Each power source, on its own, shall be capable of meeting the PSE manufacturer's output specification or, in the case of an integrated PSE, it shall be capable of operating the equipment in which it is integrated within its specifications.
- 4.2.6** When the main power source is available it shall be the exclusive source of power to the fire detection and fire alarm system, other than for currents associated with battery monitoring.



**4.2.7** If the main power source fails, the PSE shall be automatically switched over to a standby power source. When the main power source is restored, the PSE shall be automatically switched back.

**4.2.8** If the PSE is integrated within other equipment of the fire detection and fire alarm system, the switching from one power source to the other shall not cause any change in status or indications other than those relating to the power supply.

**4.2.9** If the PSE is separated from other equipment of the fire detection and fire alarm system, and the switching from one power source to the other causes an interruption in supply of power, then the duration of the interruption shall be specified in the manufacturer's data.

**4.2.10** Failure of one of the power sources shall not cause the failure of any other power source or the failure of the supply of power to the system.

## 5 Functions

**In 5.1.b replace the text with:** "shall be capable of continuously supplying  $I_{max. a}$  and simultaneously charging a battery which has been discharged to its final voltage."

**In 5.1.c replace the text with:** "may allow battery charging to be limited or interrupted when the PSE is delivering a current greater than  $I_{max. a}$ ."

**In 5.2.1 add at the end of the sentence:** "and with a high internal resistance of the battery and its associated circuitry, e.g. connections, fuses (see Annex A)." **Delete:** NOTE.

**In 5.2.2.d after "be marked with" replace the text with:** "its type designation and code or number identifying the production period".

**In 5.2 add a new sub-clause:** "5.2.3 When operating from the standby power source the PSE shall have a facility to switch off the PSE output(s) if the output voltage(s) or the voltage of the battery falls below a value specified by the PSE manufacturer."

**In 5.3.1.c replace the text with:** "the charging characteristics are within the battery manufacturer's specifications for the range of battery temperatures reached with the ambient temperature (i.e. outside the standby power source enclosure) from  $-5\text{ °C}$  to  $+40\text{ °C}$ ."

**In 5.4.c replace the text with:** "a high internal resistance of the battery and its associated circuitry, e.g. connections, fuses within 4 h of the occurrence (see Annex A)."

**In 5.4.d replace the text with:** "loss of the battery charger, within 30 min of the occurrence, except where the charger is switched off or limited as under 5.1.c."

**After** "If the PSE is separately housed from the CIE then at least a fault output common to the above mentioned faults shall be provided" **add the line:** "This output signal shall also be given if the PSE is de-energized."

**In** "If the PSE is housed within the cabinet of the CIE, then the above-mentioned faults shall be indicated in accordance with clause 8 of EN 54-2:1997 either on the CIE or on the PSE itself." **delete:** "clause 8 of" and "1997".

## EN 54-4:1997/A2:2006 (E)

## 6 Materials, design and manufacture

*In 6.1.b replace the reference "IEC 721-3-3" with: " EN 60721-3-3:1995"*

*In 6.2.1 replace the reference "IEC 529:1989" with: " EN 60529:1991"*

*In 6.3 delete 6.3.1 and include the text under 6.3. Replace "limitations" with "limitation". Delete 6.3.2.*

*In 6.4 change the text to: "If the PSE is designed to be used with a CIE (item B in Figure 1 of EN 54-1:1996) contained in a separate cabinet, then an interface shall be provided for at least two transmission paths to the CIE, such that a short circuit or interruption in one does not prevent the supply of power."*

## 7 Documentation

*In 7.1 b) add:*

"7) the maximum internal resistance of the battery and its associated circuitry,  $R_i$  max. (see Annex A);

8)  $I_{min}$ ,  $I_{max.a}$  and  $I_{max.b}$ ;

9) recommended cable parameters for each transmission path."

## 8 Marking

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*In 8a replace the reference "EN 54-4:1997" with: "EN 54-4".*

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## 9 Tests

*In 9.1.1 replace the reference "IEC 68-1:1988" with: "EN 60068-1:1994".*

*In 9.1.3 a the wording "of maximum capacity" is replaced with: "of an appropriate capacity for the test."*

*9.1.3 b is replaced with: "the output(s) shall be loaded corresponding to  $I_{max.a}$ ."*

*Add 9.1.3 c: "All inputs and outputs shall be connected to cables, equipment and/or dummy loads as specified by the manufacturer."*

NOTE For integrated PSE the loading corresponding to  $I_{max.a}$  is the condition of the equipment with maximum internal power dissipation and output loading that can be expected to occur continuously."

*In 9.2.1 the text is replaced with:*

### "9.2.1 General

**9.2.1.1** For integrated PSE the loading corresponding to  $I_{max.b}$  is the condition of the equipment with the maximum internal power dissipation and output loading that can be expected to occur while battery charging is not required.

**9.2.1.2** If the equivalent of  $I_{max.b}$  is not specified by the manufacturer, the condition equivalent to  $I_{max.a}$  shall be applied.

**9.2.1.3** For non-integrated PSE,  $I_{min}$  is the minimum output current specified by the manufacturer.

**9.2.1.4** For integrated PSE, the loading corresponding to I min. is the condition of the equipment with the minimum internal power dissipation and minimum output loading.”

**Table 1 is replaced with the following table and moved just before 9.2.1.1:**

The functional tests are shown in Table 1.

**Table 1 — Functional tests**

Test	Mains supply voltage	Condition of battery	Loading condition	Duration of test
1	$V_n^a + 10\%$	Discharged <sup>b</sup>	I max. a	4 h
2	$V_n - 15\%$	Discharged <sup>b</sup>	I max. a	4 h
3	$V_n - 15\%$	Discharged <sup>b</sup>	I max. b	Manufacturer's specification with a minimum of 5 min
4	Disconnected	Discharging <sup>c</sup>	I max. b	
5	$V_n - 15\%$	Replaced by short circuit <sup>d</sup>	I max. a	
6	$V_n - 15\%$	Replaced by short circuit <sup>e</sup>	I max. a	
7	$V_n + 10\%$	Disconnected	I max. b	
8	$V_n - 15\%$	Disconnected	I max. b	
9	$V_n + 10\%$	Fully charged <sup>f</sup>	I min	

<sup>a</sup>  $V_n$  is nominal voltage of the public electricity supply or equivalent.  
<sup>b</sup> A battery of max. specified capacity discharged to its final voltage as described in 9.3.1.1. The battery is allowed to charge during the test.  
<sup>c</sup> In this test the battery may be replaced by a laboratory power supply capable of supplying the required output current. The output voltage of the power supply shall be gradually reduced from the fully charged voltage of the battery to the voltage at which the PSE output(s) switch off as in 5.2.3.  
<sup>d</sup> Mains shall be applied after having replaced the battery by a short circuit.  
<sup>e</sup> Replace the battery by a short circuit after the mains is applied.  
<sup>f</sup> A battery charged to its fully charged voltage.

**9.2.2 is replaced with:**

**“9.2.2 Full functional test**

**9.2.2.1 Procedure for non-integrated PSE**

The test consists of all 9 tests with voltage combinations and output current as given in Table 1.

During tests 1 and 2 the output voltages of the PSE and the temperatures of the components with high power dissipation e.g. transformers, rectifiers and voltage regulators shall be measured and recorded.