



# SLOVENSKI STANDARD

## oSIST prEN 54-4:2015

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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

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

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## 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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 72.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (prEN 54-4:2015) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 54-4:1997.

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 Regulation, see informative Annex ZA, which is an integral part of this document.

EN 54-4 has been revised so as to align with the second answer to Mandate M/109.

It includes new clauses and annexes as follows:

- Requirement for software control devices (4.2.5);
- Clause 6, Assessment and verification of consistency of performance (AVCP);
- Clause 7, Classification and designation;
- Clause 8, Marking labelling and packaging;
- Annex B PSE loading and charger tests
- Annex C Laboratory procedure for testing compliance with the requirements of 4.2.1.9 c)
- Annex D Examples of integrated, non-integrated and distributed PSE
- Annex E ((informative) PSE controlled by software and related technology
- Annex ZA has been revised to align with the Construction Products Regulation (CPR).”

EN 54, *Fire detection and fire alarm systems*, consists of the following parts:

Part 1: Introduction

Part 2: Control and indicating equipment

Part 3: Fire alarm devices – Sounders

Part 4: Power supply equipment

Part 5: Heat detectors – Point detectors

Part 7: Smoke detectors – Point detectors using scattered light, transmitted light or ionization

Part 10: Flame detector – Point detectors

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Part 11: Manual call points

Part 12: Smoke detectors – Line detector using an optical light beam

Part 13: Compatibility assessment of system components

Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance

Part 15: Point detectors using a combination of detected phenomena

Part 16: Voice alarm control and indicating equipment

Part 17: Short circuit isolators

Part 18: Input/output devices

Part 20: Aspirating smoke detectors

Part 21: Alarm transmission and fault warning routine equipment

Part 22: Line-type heat detectors

Part 23: Fire alarm devices – Visual alarms

Part 24: Components of voice alarm systems – Loudspeakers

Part 25: Components using radio links and system requirements

Part 26: Carbon monoxide detectors – Point detectors

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Part 27: Duct smoke detectors

Part 28: Non-resettable (digital) line type heat detectors

Part 29: Multi-sensor fire detectors - Point detectors using a combination of smoke and heat sensors

Part 30: Multi-sensor fire detectors - Point detectors using a combination of carbon monoxide and heat sensors

Part 31: Multi-sensor detector – Point detectors using a combination of smoke, carbon monoxide and optionally heat sensors

Part 32: Guidelines for the planning, design, installation, commissioning, use and maintenance of voice alarm

NOTE This list includes standards that are in preparation and other standards may be added. For current status of published standards refer to [www.cen.eu](http://www.cen.eu).



## Introduction

This European Standard is drafted on the basis of functions which are to be provided on all power supply equipment. The power supply equipment may have its own cabinet, or may be housed with other equipment of the fire detection and fire alarm system, such as the control and indicating equipment. A fire detection and fire alarm system may use more than one power supply equipment.

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**prEN 54-4:2015 (E)****1 Scope**

This European Standard specifies requirements, methods of test and design assessment and performance criteria for power supply equipment (PSE) of fire detection and fire alarm systems installed in and around buildings (Function L of Figure 1 of EN 54-1:2011).

This European Standard provides for the assessment and verification of consistency of performance (AVCP) of power supply equipment (PSE) to this EN.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 54-1:2011, *Fire detection and fire alarm systems - Part 1: Introduction*

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

EN 54-16, *Fire detection and fire alarm systems - Part 16: Voice alarm control and indicating equipment*

EN 50130-4:2011, *Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems*

EN 50130-5:2011, *Alarm systems - Part 5: Environmental test methods*

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

**3 Terms, definitions and abbreviations**

For the purposes of this document, the terms, definitions and abbreviations given in EN 54-1:2011 together with the following apply.

**3.1****final voltage**

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

**3.2****fully charged voltage**

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

Note 1 to entry: The fully charged voltage may depend on factors, such as battery technology, temperature, condition of the battery and recent charge history of the battery. A battery with a fully charged voltage does not imply that the battery has full capacity.

**3.3****P max. a**

maximum output power which can be supplied continuously

**3.4****P max. b**

maximum output power higher than P max. a, which can be supplied while battery charging is not required and without discharging the battery

**3.5****P max. c**

maximum output power which can be supplied by the standby power source

**3.6****P min**

minimum output power of the PSE

**3.7****integrated PSE**

PSE incorporated within other equipment, which supplies power to that equipment and may have one or more outputs to power external equipment

Note 1 to entry: See Annex D for examples of integrated PSE.

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**3.8****main power source**

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part of the PSE that operates from the public electricity supply and supplies power to the connected equipment, including associated fuses or protective devices

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**3.9****standby power source**

part of the PSE that does not operate from the public electricity supply and supplies power to the connected equipment, including associated fuses or protective devices

**3.10****charger**

part of the PSE that operates either from the public electricity or from the main power source and that charges the battery of the standby power source, including associated fuses or protective devices

**3.11****distributed PSE**

PSE where the functions are located in more than one component

Note 1 to entry: See Annex D for examples of integrated PSE

**3.12****Vn**

nominal voltage of the public electricity supply or its equivalent

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**4 Product characteristics****4.1 Compliance**

In order to comply with this standard, power supply equipment (PSE) shall meet the requirements of Clause 4, which shall be verified by visual inspection or engineering assessment and shall be tested as described in Clause 5.

If the PSE is integrated in other equipment, covered by another part of EN 54, the requirements of durability of operational reliability for that other equipment shall apply instead.

**4.2 Operational reliability****4.2.1 General product characteristics**

**4.2.1.1** The PSE shall have at least two power sources, a main power source and a standby power source.

**4.2.1.2** The main power source shall be designed to operate from the public electricity supply.

**4.2.1.3** The standby power source shall be designed to operate from one or more rechargeable batteries.

**4.2.1.4** The PSE shall include a charger function capable of charging the battery and maintaining it in a fully charged state.

**4.2.1.5** When operated from the main power source, the following shall apply.

- a) The PSE outputs shall be capable of operating in accordance with the specification given in the manufacturer's data irrespective of the condition of the standby power source. This includes any charge condition of the battery, or open-circuit or short-circuit of the connection to the battery.
- b) The PSE shall be capable of continuously supplying  $P_{max. a}$  and simultaneously charging the battery in any charge condition above its final voltage.
- c) The PSE shall be capable of supplying  $P_{max. b}$  without drawing current from the battery, other than that associated with the monitoring.

**4.2.1.6** The manufacturer shall declare the types and capacities of the batteries compatible with the PSE. The batteries shall:

- a) be suitable to be maintained continuously at their fully charged voltage;
- b) be marked with its type designation and code or number identifying the production period;
- c) be mounted in accordance with the battery manufacturer's data;
- d) specified not to release electrolyte during normal operation.

NOTE 4.2.1.6.d) may be satisfied by batteries of the sealed type or valve regulated lead acid type.

**4.2.1.7** The charger shall be designed and rated as follows:

- a) Batteries shall be charged automatically. Charging of the batteries may be limited or interrupted, such that the requirement of 4.2.1.7.b) may not be met, while the PSE delivers an output power greater than  $P_{max}$  or the connected equipment is in fire alarm condition.
- b) Batteries of maximum capacity, as specified by the PSE manufacturer, discharged to their final voltage shall be recharged to at least 80 % of its rated capacity within 24 h and to their rated capacity within another 48 h, while the PSE is delivering up to  $P_{max}$  a.
- c) The charging characteristics shall be within the PSE manufacturer's specification for the range of temperatures that the batteries can reach when the ambient temperature is in accordance with the environmental class, or severity level specified by the PSE manufacturer.

**4.2.1.8** Batteries shall not discharge through the charger when the charging voltage is below the battery voltage, except for the purpose of battery monitoring.

**4.2.1.9** The PSE shall be capable of recognizing and signalling the following faults:

- a) loss of the function of a main power source, within 30 min of the occurrence;
- b) loss of the function of a standby power source, within 15 min of the occurrence;
- c) if the associated main power source is operational, a high internal resistance of batteries and their associated circuitry, e.g. connections, fuses within 4 h of the occurrence (see Annex C);
- d) loss of the function of a charger, within 30 min of the occurrence, except where the charger is switched off or limited as under 4.2.1.7.a).

**4.2.1.10** Visible indications may be given on the PSE. In this case the following shall apply.

- a) The presence of the main power source or the standby power source shall be given by means of a green light emitting indication.
- b) The presence of a fault as under 4.2.1.9.a) to d) or a system fault as under 4.2.6 shall be given by means of a yellow or amber light emitting indication, at least common to all faults.

**4.2.1.11** Standby power sources shall automatically supply power to connected equipment in the event of loss of the function of one or more main power sources.

**4.2.1.12** When operated from a standby power source, the PSE:

- a) shall be capable of operating in accordance with the specification given in the manufacturer's data;
- b) shall be capable of supplying  $P_{max}$  c, irrespective of the condition of a main power source and with an internal resistance of the batteries and its associated circuitry up to  $R_{i\ max}$  (see Annex C).

**4.2.1.13** If batteries can be damaged by deep discharge, the PSE shall have a facility to protect the batteries against deep discharge.

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**4.2.1.14** The cabinet or cabinets containing the PSE shall be of robust construction, consistent with the method of installation recommended in the documentation, and shall meet at least classification IP20C of EN 60529:1991. If the PSE is integrated with other equipment with a higher IP classification in the same cabinet then this higher IP classification shall apply.

**4.2.1.15** All manual controls, fuses, calibration elements and cable terminals shall be clearly labelled (e.g. to indicate their function, rating, or by reference to the PSE manufacturer's documentation).

**4.2.1.16** All outputs shall be protected against power overload, consistent with the PSE manufacturer's specification.

**4.2.2 Product characteristics for non-integrated PSE**

**4.2.2.1** The PSE may be non-integrated, in which case 4.2.2.2 to 4.2.2.7 shall apply.

**4.2.2.2** The manufacturer shall provide the output specification.

**4.2.2.3** The main power source and the standby power source shall each be capable of meeting the PSE manufacturer's output specification.

**4.2.2.4** The manufacturer shall declare the duration of any interruption in the supply of power to outputs during the change-over from one power source to the other.

**4.2.2.5** The PSE shall provide at least a common fault output for the faults mentioned in 4.2.1.9.a) to d). This output signal shall also be given if the PSE is de-energized.

**4.2.2.6** If the PSE is housed in a separate cabinet or cabinets, or cabinets associated with other fire detection and fire alarm system equipment, manual controls, fuses, calibration elements etc. for disconnection and adjustment of the power sources shall be accessible only by the use of a tool or key.

**4.2.2.7** PSE may have provision for more than one output, in order to power more than one piece of equipment, or equipment that require duplicated power inputs (e.g. CIE or VACIE). In this case, a short circuit in one output shall not prevent the supply of power to another output.

**4.2.3 Product characteristics for integrated PSE with external outputs**

**4.2.3.1** The PSE may be integrated with external outputs, in which case 4.2.3.2 to 4.2.3.7 shall apply.

**4.2.3.2** The manufacturer shall provide the external output specification and the maximum power consumption of the integral equipment (in total P max. b).

**4.2.3.3** The main power source and the standby power source shall each be capable of meeting the external output specification and shall be capable of powering the integral equipment, within the manufacturer's specification.

**4.2.3.4** The manufacturer shall declare the duration of any interruption in the supply of power to external outputs during the change-over from one power source to the other.

**4.2.3.5** The PSE shall provide at least a common fault output for the faults mentioned in 4.2.1.9.a) to d). This output signal shall also be given if the PSE is de-energized. This output may be the same as a fault output of the integral equipment.

**4.2.3.6** If the PSE is housed in a CIE or VACIE, manual controls, fuses, calibration elements etc. for disconnection and adjustment of the power sources shall be accessible only at AL3 or AL4 of EN 54-2 or EN 54-16.

**4.2.3.7** A short circuit, in one external output shall not prevent the supply of power to another output, or to integral equipment.

#### **4.2.4 Product characteristics for integrated PSE without external outputs**

**4.2.4.1** The PSE may be integrated without external outputs, in which case 4.2.4.2 to 4.2.4.5 shall apply.

**4.2.4.2** The manufacturer shall provide the maximum power consumption of the integral equipment (P max. b).

**4.2.4.3** The main power source and the standby power source shall each be capable of powering the integral equipment, within the manufacturer's specification.

**4.2.4.4** The PSE shall provide at least a common fault output for the faults mentioned in 4.2.1.9.a) to d). This output signal shall also be given if the PSE is de-energized. This output may be the same as a fault output in the integral equipment.

**4.2.4.5** If the PSE is housed in other equipment, manual controls, fuses, calibration elements etc. for disconnection and adjustment of the power sources shall be accessible only at AL3 or AL4 of EN 54-2 or EN 54-16, or by the use of a tool or key.

#### **4.2.5 Product characteristics for distributed PSE**

**4.2.5.1** The PSE may be distributed in which case 4.2.5.2 to 4.2.5.7 shall apply.

**4.2.5.2** For each main power source and each standby power source the manufacturer shall provide the output specification, including maximum power loading, and shall provide the possible configurations for powering connected equipment.

**4.2.5.3** For each specified configuration, one or more main power sources shall be associated with one or more standby power sources, such that connected equipment remains powered in the event of failure of any and all main power sources. If the PSE has more than one main power source, in the event of failure of a main power source, current may be drawn from one of more standby power sources.

**4.2.5.4** The PSE shall be capable of recognizing and signalling short circuit or interruption in transmission paths between its components within 100 s of the occurrence of the fault.

**4.2.5.5** The PSE shall provide at least a common fault output for the faults mentioned in 4.2.1.9.a) to d). and 4.2.5.4. This output signal shall also be given if the PSE is de-energized.

**4.2.5.6** If the PSE is housed in a separate cabinet or cabinets, or cabinets associated with other fire detection and fire alarm system equipment, manual controls, fuses, calibration elements etc. for disconnection and adjustment of the power sources shall be accessible only by the use of a tool or key.