



SLOVENSKI STANDARD

SIST EN 54-18:2006

01-april-2006

Sistemi za odkrivanje in javljanje požara ter alarmiranje – 18. del: Vhodno/izhodne naprave

Fire detection and fire alarm systems - Part 18: Input/output devices

Brandmeldeanlagen - Teil 18: Eingangs-/Ausgangsgeräte

Systemes de détection et d'alarme incendie - Partie 18: Dispositifs d'entrée/sortie

ITeH STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 54-18:2005**

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

ICS:

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

SIST EN 54-18:2006

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 54-18:2006](#)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 54-18

December 2005

ICS 13.220.20

English Version

Fire detection and fire alarm systems - Part 18: Input/output devices

Systèmes de détection et d'alarme incendie - Partie 18:
Dispositifs d'entrée/sortie

Brandmeldeanlagen - Teil 18: Eingangs-/Ausgangsgeräte

This European Standard was approved by CEN on 26 October 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 CEN 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 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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 54-18:2006](https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword.....	3
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviations	7
3.1 Terms and definitions	7
3.2 Abbreviations	7
4 Requirements	7
4.1 Compliance.....	7
4.2 Monitoring of detachable devices	7
4.3 Marking and data	8
4.4 Documentation.....	8
4.5 Requirements for software controlled devices	8
5 Tests.....	10
5.1 General.....	10
5.2 Performance and variation in supply parameters	12
5.3 Dry heat (operational).....	12
5.4 Cold (operational)	13
5.5 Damp heat, cyclic (operational)	14
5.6 Damp heat, steady state (endurance)	15
5.7 Sulphur dioxide (SO ₂) corrosion (endurance)	16
5.8 Shock (operational)	17
5.9 Impact (operational).....	18
5.10 Vibration, sinusoidal (operational).....	19
5.11 Vibration, sinusoidal (endurance).....	20
5.12 Electromagnetic Compatibility (EMC) Immunity tests	21
Annex ZA (informative) Relationship of this European Standard with the Construction Products Directive 89/106/EEC	22
ZA.1 Scope and relevant clauses.....	22
ZA.2 Procedures for the attestation of conformity of input/output devices covered by this standard	23
ZA.3 CE Marking and labelling and accompanying documentation	28
ZA.4 EC certificate and declaration of conformity	29
Bibliography	31

Foreword

This European Standard (EN 54-18:2005) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by December 2008.

This European Standard 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 European Standard.

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 [SIST EN 54-18:2006](#)

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

Part 10: Flame detectors - Point detectors

Part 11: Manual call points

Part 12: Smoke detectors - Line detectors 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 type multi-sensor fire detectors

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 routing equipment

Part 22: Line-type heat detectors

Part 23: Fire alarm devices - Visual alarms

EN 54-18:2005 (E)

Part 24: Components of voice alarm systems – Loudspeakers

Part 25: Components using radio links and system requirements

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 54-18:2006](#)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

Introduction

The term input/output devices, used in this European Standard, covers a wide range of different types of devices, which are intended for different applications, and may therefore have different functions. This European Standard does not therefore include detailed functional requirements for the input/output devices but requires that their function is sufficiently specified by the manufacturer and that they function correctly in accordance with the manufacturer's specification.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 54-18:2006](https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

EN 54-18:2005 (E)**1 Scope**

This European Standard specifies requirements, test methods and performance criteria for input/output devices connected to a transmission path of a fire detection and fire alarm system, used to receive and/or transmit electrical signals to or from the transmission path, necessary for the operation of the fire detection and fire alarm system and/or fire protection system.

An input/output device may be a physically separate device or its function may be integrated into another device in which case this European Standard may be used to assess this function.

Control and indicating equipment, and ancillary control and indicating equipment (e.g. repeater panels and fire brigade panels) are not covered by this European Standard.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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, *Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + Corrigendum 1988 + A1:1992)*

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-41287261d3b8/iec-60068-1-1988-1992>

EN 60068-2-1, *Environmental testing — Part 2: Tests — Tests A: Cold (IEC 60068-2-1:1990)*

EN 60068-2-2, *Basic environmental testing procedures — Part 2: Tests — Tests B: Dry heat (IEC 60068-2-2:1974 + IEC 60068-2-2A:1976)*

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

EN 60068-2-27, *Basic environmental testing procedures — Part 2: Tests — Test Ea and guidance: Shock (IEC 60068-2-27:1987)*

EN 60068-2-30, *Environmental testing — Part 2: Tests — Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle) (IEC 60068-2-30:1980 + A1:1985)*

EN 60068-2-42, *Environmental testing — Part 2-42: Tests — Test Kc: Sulphur dioxide test for contacts and connections (IEC 60068-2-42:2003)*

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

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

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1

input/output device

device connected to a transmission path of a fire detection and fire alarm system, used to receive and/or transmit electrical signals necessary for the operation of the fire detection and fire alarm system

3.1.2

conditioning

exposure of a specimen to environmental conditions in order to determine the effect of such conditions on the specimen

3.1.3

recovery

treatment of a specimen, after conditioning, so that the properties of the specimen may be stabilised before measurement

3.2 Abbreviations

For the purposes of this European Standard, the following abbreviations apply.

CIE: Control and indicating equipment

EMC: Electromagnetic compatibility.

[SIST EN 54-18:2006](https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

4 Requirements

4.1 Compliance

In order to comply with this European Standard, the input/output devices shall meet the requirements of this clause, which shall be verified by inspection and engineering assessment, shall be tested as described in Clause 5 and shall meet the requirements of the tests. For input/output devices integrated into another device, which is already covered by an existing European Standard, the environmental conditioning shall be performed in accordance with that European Standard, with the addition of the functional tests before, during and/or after conditioning, as required in this European Standard.

In some detector standards/specifications, the dry heat (operational) test is conducted in special test equipment (e.g. in the heat tunnel for heat detectors). The required functional testing of the integrated input/output device before, during and after the dry heat conditioning may be done in this equipment, if this is possible without disrupting the detector measurements. Otherwise, a separate dry heat test, with the same conditioning, shall be conducted. For heat detectors, the test temperature is the maximum application temperature.

4.2 Monitoring of detachable devices

If an input/output device is detachable (i.e. it is attached to a detachable mounting base), then a means shall be provided for a remote monitoring system (e.g. the control and indicating equipment) to detect the removal of the device from the base, in order to give a fault signal.

EN 54-18:2005 (E)**4.3 Marking and data****4.3.1 Marking**

Each input/output device shall be clearly marked with the following information:

- a) number and date of this European Standard (i.e. EN 54-18:2005);
- b) name or trademark of the manufacturer or supplier;
- c) model designation (type or number);
- d) wiring terminal designations;
- e) some mark(s) or code(s) (e.g. a serial number or batch code), by which the manufacturer can identify, at least, the date or batch and place of manufacture, and the version number(s) of any software, contained within the device.

For detachable devices, the head shall be marked with a), b) and d), and the base shall be marked with at least b) (i.e. its own model designation) and c).

Where any marking on the device uses symbols or abbreviations not in common use then these shall be explained in the data supplied with the device.

The marking shall be visible during installation and shall be accessible during maintenance.

The markings shall not be placed on screws or other easily removable parts.

NOTE Where ZA.3 covers the same information as required by this subclause, the requirements of this subclause are met.

[SIST EN 54-18:2006](https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006)

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

4.3.2 Data

Input/output devices shall be supplied with sufficient technical, installation and maintenance data to ensure their correct installation and operation. These data shall include the parameters necessary to define the input and/or output functions (e.g. output voltage and current ratings, alarm and fault trip levels, logic levels). If all of these data are not supplied with each device, then reference to the appropriate data sheet(s) shall be given on, or with, each device. To enable correct operation of the input/output device, these data shall describe the requirements for the correct processing of the signals from the device. This can be in the form of a full technical specification of these signals, a reference to the appropriate signalling protocol or a reference to suitable types of control and indicating equipment etc.

4.4 Documentation

The manufacturer shall prepare and provide design documentation (e.g. drawings, parts lists, block diagrams, circuit diagrams). Where appropriate, this shall include documentation of the signal processing principle.

4.5 Requirements for software controlled devices**4.5.1 General**

For input/output devices which rely on software control in order to fulfil the requirements of this European Standard, the requirements of 4.5.2, 4.5.3 and 4.5.4 shall be met.

4.5.2 Software documentation

4.5.2.1 The manufacturer shall prepare documentation which gives an overview of the software design. This shall be submitted to the testing authority together with the input/output devices. This documentation shall be in sufficient detail for the design to be inspected for compliance with this European Standard and shall include at least the following:

- a) a functional description of the main program flow (e.g. as a flow diagram or structogram) including:
 - 1) a brief description of the modules and the functions that they perform;
 - 2) the way in which the modules interact;
 - 3) the overall hierarchy of the program;
 - 4) the way in which the software interacts with the hardware of the device;
 - 5) the way in which the modules are called, including any interrupt processing;
- b) a description of which areas of memory are used for the various purposes (e.g. the program, site specific data and running data);
- c) a designation, by which the software and its version can be uniquely identified.

4.5.2.2 The manufacturer shall also prepare detailed design documentation, which only needs to be provided if required by the testing authority. It shall comprise at least the following:

- a) an overview of the whole system configuration, including all software and hardware components;
- b) a description of each module of the program, containing at least:
 - 1) the name of the module;
 - 2) a description of the tasks performed;
 - 3) a description of the interfaces, including the type of data transfer, the valid data range and the checking for valid data;
- c) full source code listings, as hard copy or in machine-readable form (e.g. ASCII-code), including all global and local variables, constants and labels used, and sufficient comment for the program flow to be recognized;
- d) details of any software tools used in the design and implementation phase (e.g. CASE-tools, compilers etc.).

4.5.3 Software design

In order to ensure the reliability of the device, the following requirements for software design shall apply:

- a) the software shall have a modular structure;
- b) the design of the interfaces for manually and automatically generated data shall not permit invalid data to cause error in the program operation;
- c) the software shall be designed to avoid the occurrence of deadlock of the program flow.

EN 54-18:2005 (E)**4.5.4 The storage of programs and data**

The program necessary to comply with this European Standard, and any preset data such as manufacturer's settings, shall be held in non-volatile memory. Writing to areas of memory containing this program and data shall only be possible by the use of some special tool or code and shall not be possible during normal operation of the device.

Site-specific data shall be held in memory which will retain data for at least 2 weeks without external power to the device, unless provision is made for the automatic renewal of such data, following loss of power, within 1 h of power being restored.

5 Tests**5.1 General****5.1.1 Atmospheric conditions for tests**

Unless otherwise stated in a test procedure, the testing shall be carried out after the test specimen has been allowed to stabilize in the standard atmospheric conditions for testing as described in EN 60068-1 as follows:

- a) temperature : (15 to 35) °C;
- b) relative humidity : (25 to 75) %;
- c) air pressure : (86 to 106) kPa.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

If variations in these parameters have a significant effect on a measurement, then such variations shall be kept to a minimum during a series of measurements carried out as part of one test on one specimen.

SIST EN 54-18:2006

5.1.2 Operating conditions for tests

<https://standards.iteh.ai/catalog/standards/sist/7ba9ebe0-fc88-41a2-8eaf-8b18b868d3b8/sist-en-54-18-2006>

If a test method requires a specimen to be operational, then the specimen shall be connected to suitable supply and monitoring equipment with characteristics as required by the manufacturer's data. Unless otherwise specified in the test method, the supply parameters applied to the specimen shall be set within the manufacturer's specified range(s) and shall remain substantially constant throughout the tests. The value chosen for each parameter shall normally be the nominal value, or the mean of the specified range.

The details of the supply and monitoring equipment used shall be given in the test report.

5.1.3 Mounting arrangements

When necessary, the specimen shall be mounted by its normal means of attachment in accordance with the manufacturer's instructions. If these instructions describe more than one method of mounting then the method considered to be most unfavourable shall be chosen for each test.

5.1.4 Functional test

Each function of the input/output device shall be activated, by a suitable means in accordance with the manufacturer's specification, and appropriate observations or measurements shall be made to confirm the correct operation of the device.

NOTE The variety and the diversity of the equipment within the scope of this European Standard make it difficult to define the precise details of this functional test. This functional test is intended to exercise each function of the device in a simple way. A more complete assessment of the performance of these functions, in accordance with the manufacturer's specification, is made in the performance and variation in supply voltage test (see 5.2).