



SLOVENSKI STANDARD
kSIST-TS FprCEN/TS 54-14:2024
01-maj-2024

Sistemi za odkrivanje in javljanje požara ter alarmiranje - 14. del: Smernice za načrtovanje, projektiranje, vgradnjo, preverjanje, uporabo in vzdrževanje

Fire detection and fire alarm systems - Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance

Brandmeldeanlagen - Teil 14: Leitfaden für Planung, Projektierung, Montage, Inbetriebsetzung, Betrieb und Instandhaltung

Systèmes de détection et d'alarme incendie - Partie 14: Lignes directrices pour la planification, la conception, l'installation, la mise en service, l'utilisation et la maintenance

Ta slovenski standard je istoveten z: FprCEN/TS 54-14

[kSIST-TS FprCEN/TS 54-14:2024](https://standards.sist.si/standards/kSIST-TS-FprCEN/TS-54-14-2024)

ICS:

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

kSIST-TS FprCEN/TS 54-14:2024 **en,fr,de**

TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

FINAL DRAFT
FprCEN/TS 54-14

February 2024

ICS 13.220.20

English Version

**Fire detection and fire alarm systems - Part 14: Guidelines
for planning, design, installation, commissioning, use and
maintenance**

Systèmes de détection et d'alarme incendie - Partie 14:
Lignes directrices pour la planification, la conception,
l'installation, la mise en service, l'utilisation et la
maintenance

Brandmeldeanlagen - Teil 14: Leitfaden für Planung,
Projektierung, Montage, Inbetriebsetzung, Betrieb und
Instandhaltung

This draft Technical Specification is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 72.

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

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a Technical Specification. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a Technical Specification.

[kSIST-TS FprCEN/TS 54-14:2024](https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024)

<https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024>



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	7
Introduction	9
1 Scope.....	10
2 Normative references.....	10
3 Terms and definitions	10
4 General.....	15
4.1 Guideline usage	15
4.2 Guideline format	15
Figure 1 — Idealized system flow chart.....	17
4.3 False alarms	17
4.4 Documentation	17
4.5 Responsibility	17
4.6 Qualifications	18
5 Assessment of needs	18
5.1 Purpose.....	18
5.2 Consultation.....	18
5.3 Parts of the building needing cover	19
5.3.1 Extent of cover	19
5.3.2 Description of extent	19
5.3.3 Areas not needing cover	20
5.4 Fire brigade attendance	21
5.4.1 Communications	21
5.4.2 Delay to output E according to EN 54-2.....	22
5.5 Fire alarm response strategy.....	22
5.6 Documentation	23
5.7 Responsibility	23
6 Planning and design.....	23
6.1 Devices connected to the system.....	23
6.2 System design	23
6.2.1 Compatibility	23
6.2.2 Fault effects.....	23
6.2.3 Hazardous atmospheres.....	24
6.2.4 False alarms	25
6.2.5 Connection to fire protection systems	25
6.2.6 Special risks	25
6.3 Zones	25
6.3.1 General.....	25
6.3.2 Detection zones	25
6.3.3 Alarm zones	26
6.4 Selection of detectors and manual call points.....	26
6.4.1 Detectors – General	26
6.4.2 Smoke detectors.....	27
6.4.3 Heat detectors.....	28

Figure 2 — Types of LTHD	28
6.4.4 Flame detectors.....	29
6.4.5 Multi-sensor fire detectors.....	30
6.4.6 Radio linked systems	31
6.4.7 Manual call points	32
6.4.8 Carbon monoxide (CO) fire detectors	32
6.4.9 Video and thermographic fire detectors.....	32
6.5 Siting and spacing of detectors and manual call points.....	33
6.5.1 General	33
Table 1 — Recommended ceiling height limits for the various detector types	33
Figure 6 — Detector positioning in ventilation ducts.....	38
Figure 7 — Illustration of room height and beam depth	40
6.5.2 Smoke and heat detectors	42
6.5.3 Flame detectors.....	42
6.5.4 Video and thermographic fire detectors.....	43
6.5.5 Line type heat detectors.....	44
6.5.6 Manual call points	45
6.5.7 Carbon monoxide (CO) fire detectors	45
6.5.8 Coincidence detection.....	45
6.6 Alarm systems and devices	46
6.6.1 General	46
6.6.2 Audible alarms.....	46
6.6.3 Visual fire alarm devices.....	47
6.7 Control and indication	47
6.7.1 General	47
6.7.2 Location of control and indicating equipment.....	47
6.7.3 Remote control and indicating panels	49
6.7.4 Alarm location aids	49
6.7.5 Fire brigade panel	49
6.8 Power supplies	50
6.8.1 Power supply equipment.....	50
6.8.2 Main power source.....	50
6.8.3 Standby power source	50
6.9 Signals to a fire alarm receiving station	51
6.10 Signals to a fault warning receiving station.....	51
6.11 Ancillary equipment or systems	51
6.12 Transmission paths	51
6.12.1 Cables.....	51
6.12.2 Radio linked systems	54
6.13 Protection against electromagnetic interference.....	55
6.14 Documentation	55
6.15 Responsibility	55
7 Installation.....	56
7.1 General	56
7.2 Siting of equipment.....	56
7.2.1 General	56
7.2.2 Hazardous areas	56
7.3 Cable installation.....	56
7.3.1 General	56
7.3.2 Cable identification.....	56

FprCEN/TS 54-14:2023 (E)

7.3.3	Multi-core cable restrictions	56
7.3.4	Cable joints and terminations	56
7.3.5	Segregation	57
7.4	Documentation	57
7.5	Responsibility	57
8	Initialization and configuration	57
8.1	General.....	57
8.2	Programming of the CIE.....	57
8.3	Documentation	57
8.4	Responsibility	57
9	Commissioning acceptance and verification	58
9.1	General.....	58
9.2	Commissioning	58
9.3	Acceptance and handover.....	58
9.4	Verification (optional)	60
9.5	Responsibility	60
10	Third party approval	60
10.1	General.....	60
10.2	Approval procedures.....	60
10.2.1	General.....	60
10.2.2	Inspection and testing.....	60
10.2.3	Testing of operation.....	61
10.3	Documentation	61
10.4	Periodic inspection by an approving body.....	61
10.4.1	General.....	61
10.4.2	Documentation	61
10.5	Qualifications	61
11	User responsibilities.....	61
11.1	General.....	61
11.2	User scheduled inspection.....	62
11.2.1	Daily user inspection	62
11.2.2	Quarterly user inspection	62
11.2.3	Annual user inspection	63
11.3	Documentation	63
12	Maintenance	63
12.1	General.....	63
12.2	Maintenance routine	63
12.2.1	General.....	63
12.2.2	Prevention of unwanted fire signals to the fire and rescue service during maintenance	63
12.2.3	Prevention of unwanted activation during routine testing.....	63
12.2.4	Precautions during maintenance.....	64
12.3	Corrective maintenance	64
12.4	Spares.....	64
12.5	Documentation	64
12.6	Responsibility	65
13	Modification of an installed system.....	65
13.1	General.....	65
13.2	Third party approval	65
13.3	Extent of compliance	65

13.4	Documentation	65
13.5	Responsibility	65
14	Operation of other fire protection systems.....	65
14.1	General	65
14.2	Responsibility	66
15	Applications in special risks	66
15.1	General	66
15.2	Electronic data processing areas	66
15.3	High-rack warehouses	67
15.3.1	General	67
15.3.2	Aspirating smoke detection.....	67
15.3.3	Other detection.....	67
15.4	Atrium and high ceiling areas	67
15.5	Hazardous areas	68
15.6	Outdoor areas	68
15.7	High value risks.....	68
15.8	Industrial areas	69
15.9	Responsibility	69
16	Integrated systems.....	69
17	Hierarchical and networked systems.....	69
Annex A (informative) False alarms		71
A.1	Causes of false alarms	71
A.2	Vulnerability of various detector types.....	71
A.2.1	Smoke detectors.....	71
A.2.2	Heat detectors.....	72
A.2.3	Flame detectors.....	72
A.3	Possible preventative measures	72
A.3.1	Multi-sensor detectors.....	72
A.3.2	Pre-alarm warnings.....	72
A.3.3	Dependency on more than one alarm signal - Coincidence detection	73
A.3.4	Activity related systems.....	73
A.3.4.1	General	73
A.3.4.2	Pre-transmission confirmation	73
A.4	Investigation of false alarms	74
Annex B (informative) Model documents		76
Figure B.1 — Model confirmation document of design.....		77
Figure B.2 — Model confirmation document of installation		78
Figure B.3 — Model confirmation document of commissioning and verification.....		79
Figure B.4 — Model confirmation document of acceptance.....		80
Annex C (informative) Model list of fire loadings for different cable types and materials... 84		
C.1	Model list of fire loadings for different cable types	84

FprCEN/TS 54-14:2023 (E)

Table C.1.1 — Cables for voltages up to 1 000 V	84
C.2 Model list of fire loadings for different materials	89
Annex D (normative) Maintenance routine.....	91
D.1 Maintenance works.....	91
Table D.1 — Intervals for maintenance	94
D.2 Inspection and servicing confirmation document.....	95
Annex E (informative) Commissioning checklist	97
Annex F (informative) Test fires.....	99
Annex G (informative) Example for calculation of ceiling irregularities	100
Bibliography	102

iTeh Standards
 (<https://standards.iteh.ai>)
 Document Preview

[kSIST-TS FprCEN/TS 54-14:2024](https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024)

<https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024>

European foreword

This document (FprCEN/TS 54-14:2023) 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 Vote on TS.

This document will supersede CEN/TS 54-14:2018.

Compared to CEN/TS 54-14:2018, the following main changes have been made:

- Table A.1 was modified to incorporate new technologies;
- new detector technologies e.g. CO, line type heat detectors, video detection were incorporated;

EN 54 series of standards, *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 detectors — Point detectors;*
- *Part 11: Manual call points;*
- *Part 12: Smoke detectors — Line detectors using an optical beam;*
- *Part 13: Compatibility assessment of system components;*
- *Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance [CEN Technical Specification];*
- *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: Resettable line-type heat detectors;*
- *Part 23: Fire alarm devices — Visual alarm devices;*

FprCEN/TS 54-14:2023 (E)

- *Part 24: Components of voice alarm systems — Loudspeakers;*
- *Part 25: Components using radio links;*
- *Part 26: Carbon monoxide detectors — Point detectors;*
- *Part 27: Duct smoke detectors;*
- *Part 28: Non-resettable 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 fire detectors — Point detectors using a combination of smoke, carbon monoxide and optionally heat sensors;*
- *Part 32: Planning, design, installation, commissioning, use and maintenance of voice alarm systems [CEN Technical Specification].*

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[kSIST-TS FprCEN/TS 54-14:2024](https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024)

<https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024>

Introduction

Guidelines and standards for the planning, design, installation, commissioning, use and maintenance of a fire detection and fire alarm system are published by many different organizations within Europe.

This document is intended as a template to be used in the drafting, review and revision of any such national standards and guidelines. It is intended that this technical specification will assist in the harmonization of practice and standards of fire detection and fire alarm systems throughout Europe.

Many national and regional authorities and organizations within Europe publish services standards for the planning, design, installation, commissioning, verification, handover or maintenance of fire safety systems. The European Standard EN 16763 was intended to create a common guideline for a minimum quality of service by establishing criteria for the quality of service of services providers, the involved staff and the output of services provided. Therefore, compliance with the requirements of EN 16763 for the service provider is recommended.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[kSIST-TS FprCEN/TS 54-14:2024](https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024)

<https://standards.iteh.ai/catalog/standards/sist/4db53426-7eaf-4cb8-bf48-58b8bf26ce6a/ksist-ts-fprcen-ts-54-14-2024>

FprCEN/TS 54-14:2023 (E)**1 Scope**

This document provides guidelines for the application of automatic fire detection and fire alarm systems in and around buildings and civil engineering works. The guideline covers planning, design, installation, commissioning and verification, third party approval, use and maintenance of the systems.

The guidelines cover systems intended for the protection of life and/or the protection of property. The guidelines cover systems with a control and indicating equipment and at least one manual call point or one fire detector. In the event of a fire, the systems may be capable of providing signals to initiate the operation of ancillary equipment (such as fixed fire extinguishing systems, smoke and heat control systems, fire compartment separation) and other precautions and actions (such as machinery shutdown or remote transmission of alarms). These guidelines do not cover the ancillary services themselves or ancillary circuits to interface with them. The guidelines take into account the potential introduction of the Open Description (OD) approach to the EN 54 series.

The guidelines only cover the fire related functions of systems combining fire alarm functions with other non-fire related functions.

The guidelines do not recommend whether or not a fire detection and/or fire alarm system should be installed in any given premises.

This document can be used as a guideline for planning, design, installation, commissioning, use and maintenance of a fire detection and fire alarm system in any country not having any equivalent national standard, or if national equivalent standard is obsolete or not covering certain aspects, e.g. new fire detection technologies.

These guidelines are used by appropriately competent persons. However, guidance is also given to other persons purchasing or using a fire detection and/or fire alarm system.

Smoke alarms manufactured to EN 14604, whether interconnected or not, are not fire detection and fire alarm systems as covered in these guidelines.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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, *Fire detection and fire alarm systems - Part 1: Introduction*

EN 54-5, *Fire detection and fire alarm systems — Part 5: Heat detectors — Point heat detectors*

EN 54-10, *Fire detection and fire alarm systems - Part 10: Flame detectors - Point detectors*

EN 54-12, *Fire detection and fire alarm systems - Part 12: Smoke detectors - Line detectors using an optical beam*

EN 54-20, *Fire detection and fire alarm systems - Part 20: Aspirating smoke detectors*

EN 54-22, *Fire detection and fire alarm systems — Part 22: Resettable line-type heat detectors*

EN 54-23, *Fire detection and fire alarm systems - Part 23: Fire alarm devices - Visual alarm devices*

EN 54-28, *Fire detection and fire alarm system - Part 28: Non-resettable line-type heat detectors*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 54-1 and the following apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui/#home>

3.1

acceptance

decision that the installed system meets the requirements of a previously agreed specification

3.2

alarm load

maximum power (normally electrical) that will be required under the fire condition

3.3

approval

acceptance by a third party that the installed system satisfies the requirements of the third party

3.4

approval body

body accepted by an authority having jurisdiction or other competent organization as having the expertise and/or legitimacy necessary to assess the compliance of the installed system with these guidelines

3.5

authority having jurisdiction

body that has powers provided under local, regional, national or European legislation

3.6

beam detector

smoke detector

line detector using a transmitted light beam

Note 1 to entry: See EN 54-12.

3.7

circuit

another word for transmission path

Note 1 to entry: See EN 54 1.

3.8

commissioning engineer

person who carries out the process of commissioning

3.9

configuration

programming the CIE to perform the functions intended by the designer, the relevant guidelines and the fire alarm response strategy

FprCEN/TS 54-14:2023 (E)**3.10****designer**

person or organization taking responsibility for the work outlined in Clause 6

3.11**detection zone card**

portable detection zone map, covering one or more individual zones

3.12**detection zone map**

diagram showing the structural boundaries of zones, and if necessary, access routes to zones

Note 1 to entry: A detection zone map is usually located in the vicinity of the CIE or at the entrance to the zone.

3.13**false alarm**

fire alarm caused by reasons other than fire

Note 1 to entry: There are different words in EU countries used to describe false alarms.

3.14**fault**

failure within the system in such a way as to jeopardize the correct functioning of the system

3.15**fault warning**

fault signal perceptible to a person

3.16**fault warning receiving station**

routing equipment installed in fault warning receiving centre, receiving fault warnings

3.17**field of view****FOV**

2D projection/representation of the space and the objects monitored by the detector

3.18**final exit**

termination of an escape route from a building giving direct access to a street passageway, walkway or open space and sited to ensure rapid safe dispersal of persons from the vicinity of a building so that they are no longer in danger from fire or smoke

3.19**fire alarm**

visual, audible or tactile indication of fire

3.20**fire alarm response strategy**

pre-planned procedures which are expected to be followed when a fire alarm occurs