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AUTOMAATNE TULEKAHJUSIGNALISATSIOONISÜSTEEM. OSA 12: SUITSUANDURID. OPTILIST VALGUSKIIRT KASUTAVAD LIINIANDURID

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

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

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NATIONAL FOREWORD

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See Eesti standard EVS-EN 54-12:2015 sisaldab Euroopa standardi EN 54-12:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 54-12:2015 consists of the English text of the European standard EN 54-12:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.04.2015.	Date of Availability of the European standard is 08.04.2015.
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ICS 13.220.20

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 54-12

April 2015

ICS 13.220.20

Supersedes EN 54-12:2002

English Version

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

Systèmes de détection et d'alarme incendie - Partie 12 : Détecteurs de fumée - Détecteurs linéaires fonctionnant suivant le principe de la transmission d'un faisceau d'ondes optiques rayonnées

Brandmeldeanlagen - Rauchmelder - Teil 12: Linienförmiger Melder nach dem Durchlichtprinzip

This European Standard was approved by CEN on 1 February 2015.

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Foreword

This document (EN 54-12:2015) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

This 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of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by April 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 54-12:2002.

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 Regulation (EU) 305/2011.

For relationship with EU Regulations see informative Annex ZA, which is an integral part of this document.

EN 54-12 has been revised so as to align with the second answer to Mandate M/109. It includes new clauses and annexes as follows:

— Clause 6 Assessment and verification of constancy of performance (AVCP);

— Clause 7 Classification and designation;

— Clause 8 Marking, labelling and packaging;

— Annex H (informative) Information concerning the requirements for the response to slowly developing fires;

— Annex I (informative) Data supplied with line detectors using an optical beam.

The main technical changes are as follows:

— The definition of response value has been modified so that it relates the same smoke density for line detectors using an optical beam both with and without a separate reflector.

— Changes to the test conditions and requirements for the Tolerance to beam misalignment test and the Vibration (endurance) test.

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;*

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— *Part 10: Flame detectors — Point detectors*;

— *Part 11: Manual call points*;

— *Part 12: Smoke detectors — Line detectors using an optical light beam* [the present document];

— *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* [currently at acceptance stage];

— *Part 23: Fire alarm devices — Visual alarms devices*;

— *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* [currently at drafting stage];

— *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* [currently at acceptance stage].

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 .

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

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1 Scope

This European Standard specifies requirements, test methods and performance criteria for line detectors using an optical beam that detect smoke by utilizing the attenuation and/or changes in attenuation of an optical beam, for use in fire detection and fire alarm systems installed in buildings (see EN 54-1:2011).

This European Standard provides for the assessment and verification of constancy of performance (AVCP) of line detectors using an optical beam to this EN.

This European Standard does not cover:

— line detectors using an optical beam designed to operate with separations between opposed components of less than 1 m;

— line detectors using an optical beam whose optical path length is defined or adjusted by an integral mechanical connection;

— line detectors using an optical beam with special characteristics, which cannot be assessed by the test methods in this European Standard.

NOTE The term “optical” is used to describe that part of the electromagnetic spectrum produced by the transmitter to which the receiver is responsive; this is not restricted to visible wavelengths.

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

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 60064:1995, *Tungsten filament lamps for domestic and similar general lighting purposes — Performance requirements (IEC 60064:1993, modified)*

EN 60068-1:2014, *Environmental testing — Part 1: General and guidance (IEC 60068-1:2013)*

EN 60068-2-1:2007, *Environmental testing — Part 2-1: Tests — Test A: Cold (IEC 60068-2-1:2007)*

EN 60068-2-2:2007, *Environmental testing — Part 2-2: Tests — Test B: Dry heat (IEC 60068-2-2:2007)*

EN 60068-2-6:2008, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:2007)*

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

EN 60068-2-75:2014, *Environmental testing — Part 2-75: Tests — Test Eh: Hammer tests (IEC 60068-2-75:2014)*

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EN 60068-2-78:2013, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state (IEC 60068-2-78:2012)*

EN 60081:1998, *Double-capped fluorescent lamps — Performance specifications (IEC 60081:1997)*

3 Terms and definitions

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

3.1
line detector using an optical beam
detector consisting at least of a transmitter and a receiver, and which may include reflector(s), for the detection of smoke by the attenuation and/or changes in attenuation of an optical beam

3.2
transmitter
component from which the optical beam emanates

3.3
receiver
component which receives the optical beam

3.4
optical path length
total distance traversed by the optical beam between the transmitter and the receiver

3.5
opposed component
component [transmitter and receiver or transmitter-receiver and reflector(s)] of the beam detector whose position determines the optical path

3.6
separation
physical distance between the opposed components [transmitter and receiver or transmitter-receiver and reflector(s)]

3.7
attenuation
value "A", expressed in dB, of the reduction in intensity of the optical beam at the receiver, defined by the following formula:

$$A = 10 \log_{10}(I_0/I)$$

where

I_0 is the received intensity without reduction in intensity;

I is the received intensity after reduction in intensity

3.8
response value
level of attenuation at which an alarm signal is produced

Note 1 to entry: This value, denoted C, is given by the following formula:

$$C = F * n_f / n_v \text{ dB}$$

where

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