AS 7240.15:2018

Australian STANDARD

Fire detection and alarm systems

Part 15: Point type fire detectors using smoke and heat sensors (ISO 7240-15:2014, MOD)

STANDARDS Australia

AS 7240.15:2018

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Association of Hydraulic Services Consultants Australia
Australasian Fire and Emergency Service Authorities Council
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Australian Institute of Building Surveyors
CSIRO
Deafness Forum of Australia
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Engineers Australia
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Fire detection and alarm systems

Part 15: Point type fire detectors using smoke and heat sensors (ISO 7240-15:2014, MOD)

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Preface

This Standard was prepared by the Standards Australia Committee FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS 7240.15—2004, *Fire detection and alarm systems, Part 15:Point type smoke detectors using scattered light, transmitted light or ionization sensors in combination with a heat sensor (ISO 7240-15:2004, MOD).*

The objective of this Standard is to specify requirements, test methods, and performance criteria for point-type fire detectors using smoke and heat sensors, incorporating in one mechanical enclosure at least one smoke sensor and at least one other sensor which responds to heat, and in which the signals of smoke sensors are combined with signals of the heat sensors.

The performance of a single sensor within the detector covered by this Standard cannot be sufficient for conformity to other parts of AS ISO 7240 for the single sensor detector.

Certain types of detectors can contain radioactive materials. The national requirements for radiation protection differ from country to country and they are not therefore specified in this Standard. However, such detectors are expected to conform to the national requirements and be in line with Organization for Economic Co-operation and Development (OECD), *Recommendations for ionization smoke detectors in implementation of radiation protection standards* (Nuclear Energy Agency, Organization for economic Co-operation and Development, Paris, France).

For the testing of other types of detectors, or detectors working on different principles, this Standard can be used only for guidance. Detectors with special characteristics, developed for specific risks, are not covered in this Standard.

Major changes in this edition are as follows:

(a) Introduces a requirement that smoke sensors operating on the principle of scattered or transmitted light are to be marked with one of two possible nominal response threshold bands. The availability of two response threshold bands provides installation designers with a detector selection choice to further reduce the risk of unwanted alarms in installations where unfavourable environmental conditions are present.

(b) Introduces additional requirements for smoke detectors with more than one smoke sensor.

This Standard is an adoption with national modifications, and has been reproduced from, ISO 7240-15:2014, *Fire detection and alarm systems — Part 15: Point-type fire detectors using smoke and heat sensors*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to ISO 7240-15:2014 for the application of this Standard in Australia.

As this document has been reproduced from an International Standard, the following applies:

(i) In the source text “this part of ISO 7240” should read “this Australian Standard”.

(ii) A full point substitutes for a comma when referring to a decimal marker.

Australian Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 3, *Fire detection and alarm systems*.

This second edition cancels and replaces the first edition (ISO 7240-15:2004), which has been technically revised.

ISO 7240 consists of the following parts, under the general title *Fire detection and alarm systems*:

— *Part 1: General and definitions*

— *Part 2: Control and indicating equipment*

— *Part 3: Audible alarm devices*

— *Part 4: Power supply equipment*

— *Part 5: Point-type heat detectors*

— *Part 6: Carbon monoxide fire detectors using electro-chemical cells*

— *Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization*

— *Part 8: Carbon monoxide fire detectors using an electro-chemical cell in combination with a heat sensor*

— *Part 9: Test fires for fire detectors [Technical Specification]*

— *Part 10: Point-type flame detectors*

— *Part 11: Manual call points*

— *Part 12: Line type smoke detectors using a transmitted optical beam*

— *Part 13: Compatibility assessment of system components*

— *Part 14: Design, installation, commissioning and service of fire detection and fire alarm systems in and around buildings*

— *Part 15: Point-type fire detectors using smoke and heat sensors*

— *Part 16: Sound system control and indicating equipment*

— *Part 17: Short-circuit isolators*

— *Part 18: Input/output devices*

— *Part 19: Design, installation, commissioning and service of sound systems for emergency purposes*

— *Part 20: Aspirating smoke detectors*

— *Part 21: Routing equipment*

— *Part 22: Smoke-detection equipment for ducts*

— *Part 23: Visual alarm devices*

— *Part 24: Sound-system loudspeakers*

— *Part 25: Components using radio transmission paths*

— *Part 27: Point-type fire detectors using a scattered-light, transmitted-light or ionization smoke sensor, an electrochemical-cell carbon-monoxide sensor and a heat sensor*

— *Part 28: Fire protection control equipment*

The following part is under preparation:

— *Part 29: Video fire detectors*

Introduction

This part of ISO 7240 is prepared by ISO/TC 21/SC 3, the secretariat of which is held by SA, and is based on ISO 7240-15:2004.

Point-type fire detectors using smoke and heat sensors are general purpose fire detectors for installation in and around buildings. Multi-sensor detectors respond to a broad range of fires and can be designed to achieve high stability against deceptive phenomena that can result in unwanted alarms.

A fire detection and alarm system is required to function satisfactorily not only in the event of fire, but also during and after exposure to conditions it is likely to meet in practice, including corrosion, vibration, direct impact, indirect shock and electromagnetic interference. Specific tests are intended to assess the performance of detectors under such conditions.

This edition introduces a requirement that smoke sensors that operate on the principle of scattered or transmitted light to be marked with one of two possible nominal response threshold bands. The availability of two of response threshold bands provides installation designers with a detector selection choice to further reduce the risk of unwanted alarms in installations where unfavourable environmental conditions are present.

This edition introduces additional requirements for smoke detectors with more than one smoke sensor.

Australian Standard®

Fire detection and alarm systems

Part 15: Point type fire detectors using smoke and heat sensors (ISO 7240-15:2014, MOD)

1 Scope

This part of ISO 7240 specifies requirements, test methods, and performance criteria for point-type fire detectors using smoke and heat sensors, incorporating in one mechanical enclosure at least one smoke sensor and at least one other sensor which responds to heat, and in which the signal(s) of the smoke sensor(s) is (are) combined with the signal(s) of the heat sensor(s).

The performance of a single sensor within the detector covered by this part of ISO 7240 cannot be sufficient for conformity to other parts of ISO 7240 for the single sensor detector.

Certain types of detectors can contain radioactive materials. The national requirements for radiation protection differ from country to country and they are not therefore specified in this standard. However, such detectors are expected to conform to the national requirements and be in line with the recommendations of the Nuclear Energy Agency (NEA) of the Organization for Economic Co-operation and Development (OECD)[1)].

For the testing of other types of detectors, or detectors working on different principles, this part of ISO 7240 can be used only for guidance. Detectors with special characteristics, developed for specific risks, are not covered in this part of ISO 7240.

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.

ISO 209, *Aluminium and aluminium alloys — Chemical composition*

ISO 7240-1, *Fire detection and alarm systems — Part 1: General and definitions*

ISO 7240-5:2012, *Fire detection and alarm systems — Part 5: Point-type heat detectors*

ISO 7240-7, *Fire detection and alarm systems — Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization*

IEC 60068-1, *Environmental testing — Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing — Part 2-1: Tests. Tests A: Cold*

IEC 60068-2-2, *Environmental testing — Part 2-2: Tests. Tests B: Dry heat*

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

IEC 60068-2-27, *Environmental testing — Part 2-27: Tests. Test Ea and guidance: Shock*

IEC 60068-2-30, *Environmental testingPart 2-30: Tests. Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

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

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

1) OECD, *Recommendations for ionization smoke detectors in implementation of radiation protection standards. Nuclear Energy Agency, Organisation for economic Co-operation and Development, Paris, France*