BS 5839-1:2025

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Foreword

Publishing information

This part of BS 5839 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 April 2025. It was prepared by Technical Subcommittee FSH/12/1, Installation and servicing, under the authority of Technical Committee FSH/12, Fire detection and alarm systems. A list of organizations represented on these committees can be obtained on request to the committee manager.

Supersession

This part of BS 5839 supersedes BS 5839-1:2017, which is withdrawn.

Relationship with other publications

BS 5839 is published in the following parts:

- Part 1: Design, installation, commissioning and maintenance of systems in non-domestic premises – Code of practice;

- Part 3: Specification for automatic release mechanisms for certain fire protection equipment;
- Part 6: Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises;
- Part 8: Design, installation, commissioning and maintenance of voice alarm systems – Code of practice;
- Part 9: Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems.

A guide to queries and interpretations on BS 5839-1 is given in PD 6531.

Information about this document

This is a full revision of the document, and introduces the following principal changes.

1. The document has undergone some restructuring, with Clause **4** being moved to a new Introduction and Clause **33** being merged with Clause **31**.
2. A new Section **7** has been introduced on extensions and modifications.
3. As a code of practice, variations from the recommendations of this part of BS 5839 might be acceptable, subject to the agreement of all interested parties. However, it is now considered, in the light of a number of fatal fires, that variations from the recommendations of certain clauses are unacceptable. Those considered unacceptable are now set out explicitly in Clause **6**.
4. The siting recommendations for manual call points have been simplified.
5. It is now recommended that, in rooms in which people sleep, preference is given to forms of automatic fire detection other than heat detectors (or sprinkler heads performing the same role as heat detectors).

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Use of this document

As a code of practice, this part of BS 5839 takes the form of recommendations and guidance. It is not to be quoted as if it were a specification. Users are expected to ensure that claims of compliance are not misleading.

Users may substitute any of the recommendations in this part of BS 5839 with practices of equivalent or better outcome. Any user claiming compliance with this part of BS 5839 is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this part of BS 5839 that the execution of its provisions will be entrusted to appropriately qualified and competent people, for whose use it has been produced.

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Presentational conventions

The provisions of this document are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word “should” is used to express recommendations of this document. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this document. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

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Section 1 General

Introduction

A principal purpose of a fire detection and fire alarm system is to support the fire evacuation strategy for the building. It is, in particular, important that the system design suitably supports the required fire evacuation procedures, rather than those procedures being designed around a predetermined system design.

The need for a fire detection and fire alarm system in any specific building is normally determined by the authority responsible for enforcing fire safety legislation in that building and/or by a fire risk assessment carried out by the owner, landlord, occupier(s) or employer(s), as appropriate. It has therefore been assumed in the preparation of this part of BS 5839, which covers the design, installation, commissioning and maintenance of fire detection and fire alarm systems in non-domestic premises, that the need for such a system will already have been agreed.

Where there is uncertainty regarding the need for a fire detection and fire alarm system, guidance can be found in one or more of the following:

- BS 9991;
- BS 9999;
- guidance documents that support fire safety legislation;
- insurance documentation; and
- any relevant fire risk assessment.

In general, it is appropriate to install some form of fire detection and fire alarm system in virtually all buildings, other than very small premises that are relatively open-planned, so that any fire is quickly detected by occupants, who will then be able to warn others by word of mouth or simple mechanical devices.

Fire detection and fire alarm systems that incorporate detectors in the communal areas or ancillary accommodation (e.g. plant rooms) within purpose-built flats are not normally required; they are normally undesirable and can even lead to risk to occupants. This does not preclude the provision of fire detection as part of a smoke control system, for which guidance is given in BS 7346-8 and BS 7273-6, nor fire detection for the purposes of alerting certain key personnel.

National building regulations ([1], [2], [3]) require fire detection and fire alarm systems to be installed in many buildings at the time of construction. In addition, legislation requires that, where necessary to safeguard relevant persons in case of fire, existing premises are equipped with “appropriate fire detection and fire alarm systems”.

Although this part of BS 5839 makes recommendations for the provision of fire detection and fire alarm systems in a wide variety of premises, reference to particular types of premises in Annex A does not necessarily mean that all such premises are required by law to have such systems installed. In certain small premises, word of mouth or simple mechanical devices, such as hand-operated bells or rotary gongs, might constitute an adequate means of giving warning to occupants in the event of fire.

Manual fire detection and fire alarm systems are often sufficient to satisfy legislation in workplaces in which no one sleeps. Automatic fire detection is usually required by legislation to supplement the manual system in premises in which people sleep. Automatic fire detection might also be necessary to satisfy legislation under the following circumstances:

1. where the automatic fire detection forms part of a fire engineering solution;
2. where fire protection systems, such as door closing facilities or smoke control systems, are to be operated automatically in the event of fire; and
3. where the low level of occupancy of a building, or part of a building, is such as to create the potential for fire to prejudice means of escape by occupants before they are aware of the fire.

Automatic fire detection is also commonly used to protect property by enabling the early attendance of the fire and rescue service, in response to summoning by occupants of the building or by transmission of fire alarm signals to an ARC from where the fire and rescue service will be summoned. Automatic fire detection and fire alarm systems might, therefore, be required or recommended by the property insurers.

Fire protection is not to be confused with fire prevention or other fire precautions, and the provision of a fire detection and fire alarm system can never be regarded as giving complete protection against fire. A fire detection and fire alarm system is, however, likely to form an important component in defence against fire, and can form part of a fire engineering solution. Advice on fire engineering solutions can be found in BS 7974 and PD 7974-4.

1 Scope

This part of BS 5839 gives recommendations for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in and around buildings, other than domestic premises. It does not recommend whether or not a fire detection and fire alarm system should be installed in any given premises.

NOTE 1 Recommendations for fire detection and fire alarm systems in domestic premises are given in BS 5839-6.

This part of BS 5839 covers systems that range from those comprising only one or two manual call points and sounders to complex networked systems that incorporate a large number of automatic fire detectors, manual call points and sounders, connected to numerous inter-communicating control and indicating panels. It gives recommendations relating to the interaction between fire detection and fire alarm systems and voice alarm systems, but does not give recommendations for the voice alarm systems themselves.

NOTE 2 Recommendations for voice alarm systems and voice sounders are given in BS 5839-8.

This part of BS 5839 also covers systems that are capable of providing signals to initiate the operation of other fire protection systems and equipment (such as fire extinguishing systems, smoke control systems or automatic door release equipment) or safety measures (such as shutdown of air handling systems, closing of oil or gas valves or grounding of lifts). It does not apply to the other systems and equipment themselves, or the ancillary circuits to interface with them.

NOTE 3 Recommendations for the planning, installation and servicing of facilities for operation of certain fire protection systems by the systems addressed within this part of BS 5839 are given in the BS 7273 series.

This part of BS 5839 does not cover systems whose primary function is to extinguish or control fire, such as sprinkler or automatic extinguishing systems, even though they might have a secondary alarm function; it does, however, cover the use of a signal from an automatic extinguishing system as one initiating element of a fire alarm system (e.g. by use of a pressure or flow switch).

This part of BS 5839 does not cover:

1. systems combining fire alarm functions with other non-fire related functions;

   NOTE 4 Recommendations for such integrated systems are given in BS EN 50398-1.

2. the 999 (or 112) public emergency call system;
3. manually or mechanically operated sounders;
4. audible or visual way-guidance systems which are designed to complement fire alarm systems; and

5. temporary fire detection and fire alarm systems.

   NOTE 5 Such systems are often customized, using the principles of BS 5839-1, for particular applications, such as buildings with hazardous cladding that are awaiting remediation, and construction sites. Guidance on temporary fire detection and fire alarm systems for blocks of flats in which a temporary simultaneous evacuation is required pending remediation of defects is given in an NFCC publication [4].

NOTE 6 Recommendations for fire detection and fire alarm systems in electronic data processing installations and similar critical electronic equipment rooms are given in BS 6266, which provides recommendations over and above those given in this part of BS 5839.

NOTE 7 Recommendations for fire detection and fire alarm systems in hospitals are given in the NHS Estates publications HTM 05-03 Part B [N1] (in England and Wales) or SHTM 82 [N2] (in Scotland).

This part of BS 5839 applies to extensions and alterations to existing systems, in respect of the design, installation, commissioning and certification of the new work.

2 Normative references

3 Terms and definitions

4 Categories of system

5 Exchange of information and definition of responsibilities

6 Variations from the recommendations of this document

Section 2 Design considerations

7 Relationship between system category and protected areas

8 Actuation of other fire protection systems or safety facilities

9 Systems in explosive gas or dust atmospheres

10 System components

11 Monitoring, integrity and reliability of circuits external to control equipment

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Bibliography