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PUBLISHED DOCUMENT

**Queries and interpretations
on BS 5839-1**

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Summary of pages

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Foreword

Publishing information

This Published Document is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 April 2018. It was prepared by Subcommittee FSH/12/1, *Installation and servicing*, under the authority of Technical Committee FSH/12, *Fire detection and alarm services*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This Published Document supersedes PD 6531:2010, which is withdrawn.

Relationship with other publications

Since the publication of [BS 5839-1](#), a number of queries on interpretation have been submitted to BSI. In some cases, the queries have shown that although the standard is correct, misunderstandings have arisen over both its interpretation and the philosophies behind its recommendations.

This Published Document, therefore, gives not merely the queries and answers, but seeks to give the intentions of [BS 5839-1](#) in the hope that these might help future users of the standard.

Information about this document

This Published Document gives supplementary information on the recommendations and application of [BS 5839-1:2017](#); it does not in any way supersede or modify the recommendations in [BS 5839-1](#). Any user claiming compliance with [BS 5839-1](#) is expected to be able to justify any course of action that deviates from its recommendations.

Unless stated otherwise, all clause and subclause references in this Published Document are to [BS 5839-1:2017](#).

This is a full revision of the Published Document and all queries and answers have been revised in line with [BS 5839-1:2017](#).

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a Published Document cannot confer immunity from legal obligations.

0 Introduction

0.1 Summary of BS 5839-1

The [BS 5839-1:2017](#) code of practice is subdivided into several sections, each one dealing with specific aspects of the design and installation of the fire detection and fire alarm system up to the time it is ready to enter operation. There are seven sections as follows:

- *General* gives the scope of the document, normative references and terms and definitions. This section also explains why a fire detection and fire alarm system might be needed and the type of systems available. It provides several categories of systems which can be used by designers to suit specific cases. It defines the exchange of information which is needed between the parties involved and stipulates when and how variations to recommendations may be adopted when the main recommendations cannot be complied with.
- *Design considerations* re-groups all items which need to be considered during the system design stage. This includes relating the system categories and areas that are protected and assessing the subdivision of a system in detection zones and alarm zones. More specifically, design considerations address specific issues leading to the selection of the correct type of fire detection and audible and visual alarms, as well as the specific type of control and indicating equipment and power supply equipment which should be used. It also makes recommendations on network systems and radio-linked systems.
- *Limitation of false alarms and unwanted fire alarm signals* recognizes that false alarms can seriously prejudice the safety of occupants by reducing their trust in any future alarms and that unwanted fire alarm signals can waste precious resources in the fire and rescue service. Responsibilities for the limitation of such false alarms and unwanted fire alarm signals are clearly established and tools are given for use by those responsible to achieve the recommended limitation. This section can help users to address a high rate of false alarms in existing systems, regardless of whether they were designed in accordance with the 2017 version of [BS 5839-1](#).
- *Installation* establishes the responsibilities of the installer and recommends best practices and workmanship as well as giving recommendations for the inspection and testing of the system wiring.
- *Commissioning and handover* specifies the process involving thorough testing of the installed system to ensure that it operates correctly in accordance with the recommendations of the standard and with the specification. It specifies documentation and records which should be made available before the system handover to the purchaser for acceptance.
- *Maintenance* is a critical and essential activity for ensuring the long-term reliability of the installed fire detection and fire alarm system. This section specifies the test and verification process to be carried out by the user and routine work by a third-party inspection and servicing organization. It also gives guidance and recommendations for dealing with modifications to the system.
- *User's responsibilities* specify the need for the user to appoint a single, named member of the premises management to supervise all matters pertaining to the fire detection and fire alarm system, including the maintenance of records in a logbook.

Two normative and five informative annexes are included that provide supplementary information to support several aspects covered by the code.

0.2 Relationship with other publications

[BS 5839-1](#) is the first part of a series of British Standard codes of practice which apply to fire detection and fire alarm systems in buildings. Other codes include:

[BS 5839-6](#), *Fire detection and fire alarm systems for buildings — Part 6: Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises*

[BS 5839-8](#), *Fire detection and fire alarm systems for buildings — Part 8: Code of practice for the design, installation, commissioning and maintenance of voice alarm systems*

[BS 5839-9](#), *Fire detection and fire alarm systems for buildings — Part 9: Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems*

[BS 6266](#), *Fire protection for electronic equipment installations — Code of practice*

[BS 7273-1](#), *Code of practice for the operation of fire protection measures — Part 1: Electrical actuation of gaseous total flooding extinguishing systems*

[BS 7273-3](#), *Code of practice for the operation of fire protection measures — Part 3: Electrical actuation of pre-action watermist and sprinkler systems*

[BS 7273-4](#), *Code of practice for the operation of fire protection measures — Part 4: Actuation of release mechanisms for doors*

[BS 7273-5](#), *Code of practice for the operation of fire protection measures — Part 5: Electrical actuation of watermist systems (except pre-action systems)*

[BS 9999](#), *Fire safety in the design, management and use of buildings — Code of practice*

[BS 5839-1:2017](#) also makes normative references to product standards giving requirements for components or fire detection and fire alarm systems such as the BS EN 54 series of standards and, where applicable, the BS ISO 7240 series of standards.

0.3 Significant changes introduced in the 2017 edition of BS 5839-1

In Clause 2, the reference to [BS 8591](#) has been added and the reference to [BS 5979](#) has been removed as this standard has now been withdrawn.

References to BS EN 54-21, BS EN 54-29, BS EN 54-30 and BS EN 54-31 have been added. However, as these new European Standards have not yet been accepted for harmonization and citation in the OJEU, references to BS ISO 7240-8 and BS ISO 7240-15 have been maintained as they are still considered relevant.

In **3.14**, the definition of *critical signal path* has been expanded to include transmission equipment for routing signals to alarm receiving centres.

A new definition of *unwanted fire alarm signal (UFAS)* (**3.63**) has been added. This new definition is important as it enables the code to address the effect of UFAS on the fire and rescue service.

In **8.2**, the multi-sensor detectors are now considered as one of the detection options for Category L3 and L4 systems and in escape routes for Category L1 systems. An informative note explains the process of designing Category L2 systems.

In **11.2** and **20.2b)** it is now recommended that a protective cover is fitted to a Type A manual call point to help prevent false alarms.

11.2 now recommends that alarm transmission and fault warning routing equipment should conform to the product requirements (but not the installation requirements) specified in BS EN 54-21.

Clause **15** has been modified to:

- recommend that the alarm receiving centre to which fire alarm signals are relayed conforms to [BS 8591](#) and has in place an agreement with the appropriate fire and rescue service to pass on fire signals from fire alarm systems at the monitored property; and
- include a new recommendation that, where fire alarm signals are routed via the routing equipment of an intruder alarm system, the standby power supplies for the routing equipment conform to **25.4**.

In **19.2.2**, a recommendation has been made that, in premises, other than residential care homes, which generate a high number of unwanted fire signals, automatic transmission of a signal to an alarm receiving centre may be delayed pending investigation of alarm signals from these devices.

A new recommendation has been added to describe the operation of coincidence alarms overriding a staff alarm if a second detector operates. A flow chart has been provided to illustrate this operation.

In **20.2b)**, the recommendation has been changed stating that all MCPs should be fitted with a protective cover, which is moved to gain access to the frangible element.

A new subclause, **21.1.7**, has been introduced specifically addressing video fire detectors, re-grouping text which was in different subclauses in the 2013 edition.

New text in the **21.1.8** commentary explains detection principle choices involving single sensor detectors and multi-sensor detectors.

A new bullet point has been added to **21.2**. It refers to a new Annex E that provides a procedure for a designer to record the selection of the type detector and its response characteristics to match a specific application.

Attention is drawn in Clause **22** to the need to consider field testing of hard-to-access detectors when designing the system.

In **22.9** and Table 3, it is now recommended that the limits specified for ceiling heights should only be used as guidance for vertical or flue-like structures, such as lift shafts and stairwells.

In **25.2**, the recommendation to provide double pole isolation has been replaced with a recommendation to provide local safe isolation, which need not be double pole. An informative note explains what is meant by “special tool”.

In **26.2**, recommendations for cables, wiring and other interconnections have been updated to reflect the currently available standards: BS EN 60702-1, BS EN 60702-2, [BS 7629-1](#) and [BS 7846](#). In addition, reference is made to the tests in BS EN 50200 and [BS 8434-2](#) for the duration of survival of cables.

The old heading of Clause **29**, *Electrical safety*, has been replaced with the new heading *Electrical earthing*.

Section **3** has been expanded and introduces the concept of “unwanted fire alarm signals”. To minimize the risk of false alarms and unwanted fire alarm signals, it recommends that manual call points should be fitted with protective covers and that systems that incorporate connection to an alarm receiving centre should have this connection disabled during the soak period.

In Clause **45**, recommendations have been added for:

- measuring the battery voltage;
- testing multi-sensor fire detectors;
- using different types of devices when carrying system tests; and
- checking whether a suitable zone plan has been provided.

There is a new Annex E (informative), which gives advice regarding selection and application of fire detectors.

Annex F, which in the 2013 edition gave guidance on visual alarm device illumination characteristics, has been removed as it duplicated the information in the referenced code LPS CoP 0001.

1 Scope

This Published Document gives queries concerning the interpretation of [BS 5839-1:2017](#), together with the relevant answers.

2 Normative references

The following referenced documents are indispensable for the application 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.

[BS 5839-1:2017](#), *Fire detection and fire alarm systems for buildings — Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises*

[BS 7671](#), *Requirements for electrical installations — IET Wiring Regulations*

3 Queries and interpretations on BS 5839-1:2017

3.1 The use of isolators between zones

Query

[BS 5839-1:2017](#), **12.2.2**, sets limitations as to the effect of a fault or faults in the wiring. What is the philosophy behind these limitations? Why are the areas limited by a fault for addressable systems not identical to the zones for non-addressable systems?

Answer

The commentary to Clause **13** states that zones should be small enough for the source of the fire to be quickly located. The recommended limit to the area of a non-addressable or addressable zone with automatic fire detection is given in **13.2.3a)** and **13.2.4b)** as 2 000 m². A zone should also be limited to one storey for buildings larger than 300 m².

Clause **12** includes the recommendations for system integrity.

Subclause **12.2.2** recommends that a single short circuit or an open circuit fault on an automatic fire detector circuit should not disable protection either within an area of more than 2 000 m², or on more than one floor of the building plus a maximum of five devices (automatic detection, manual call points, sounders or a combination of these) on the floor immediately above and five devices on the floor immediately below that floor.

For a non-addressable system, and for an addressable system wired with a radial circuit for each zone, each circuit is dedicated to an individual zone, so the area limit for a zone would be identical to the area limit for system integrity (generally up to 2 000 m²).

For a loop wired addressable system, the area limits for zones and for system integrity need not be identical. A zone is limited to an area of 2 000 m², and system integrity also limits the area affected by a fault to 2 000 m². However, they need not be the identical 2 000 m² areas. Up to five devices on the floor above and up to five devices on the floor below may be included in the 2 000 m² area for system integrity. For loop wired systems, the integrity for short circuit faults would be achieved using short circuit isolators, such that the area protected between isolators did not exceed 2 000 m².