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To: All NSI Fire Gold and Fire Silver approved companies and applicants

TECHNICAL BULLETIN No: 0047

Issue 2

Publication OF BS 5839-6:2019 Fire Detection and Fire Alarm Systems for Buildings (Part 6: Code of Practice for Design, Installation, Commissioning and Maintenance of Systems in Domestic Premises)

Note: This Technical Bulletin 0047 dated 23rd October 2019 supersedes Technical Bulletin 0047 dated 16th May 2019 and corrects the Grade E reference in the third paragraph of Section 13c to Grade F.

BS 5839-6:2019 has a publication date of 30 April 2019 and is available through licensed outlets including NSI who can supply copies at a discounted rate.

Implementation timescale for Applicant Companies

Applicant Companies will be audited against BS 5839-6:2019 with immediate effect and any Improvement Needs recorded against clauses of the Standard will have to be satisfactorily addressed before approval can be granted.

Implementation timescale for existing Approved Companies

Existing NSI approved companies have until the 30th October 2019 to comply with the new standard. In the interim we may raise Auditor Notes for any of the requirements within the new standard that are not fully satisfied. If you do not address any Auditor Notes satisfactorily then these will be treated as Improvement Observation / Improvement Need Reports post 30th October 2019.

Note regarding the status of BS 5839-6:2019

Although issued as a code of practice by the British Standards Institution, it is important to note that compliance with the recommendations given in BS 5839-6:2019 is regarded as mandatory for all companies wishing to maintain NSI approval; subject to any additional clarifications and guidance included within this Technical Bulletin or issued subsequently.

The recommendations given in BS 5839-6:2019 must therefore be regarded as requirements in relation to NSI approval for Fire Gold and Fire Silver unless there is documentary evidence

to demonstrate the client has accepted and agreed any variations against the recommendations of BS 5839-6:2019.

Details of the changes

Where the actual wording of the standard is quoted, it is reproduced in bold text.

Where it is considered relevant to further clarify the specified requirement, additional guidance is included in italics.

We will consider alternative methods of achieving compliance with specified requirements where these can be demonstrated to be equivalent.

Please note this is not a definitive list of all the changes to BS 5839-6. Only the significant changes to BS 5839-6 are detailed below. There have been numerous editorial changes and minor amendments to the standard and you should refer to BS 5839-6:2019 if you are at all unsure about any of the recommendations included within the standard.

Foreword

This part of BS 5839 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on the 30th April 2019. It was prepared by Technical Subcommittee FSH/12/1, Installation and servicing, under the authority of Technical Committee FSH/12, Fire detection and fire alarm systems.

The Foreword clarifies the 2019 edition **is a full revision of the Standard**, and that it **supersedes BS 5839-6:2013, which is withdrawn**.

The forward also identifies the following **principal changes**:

- **removal of Grade B and Grade E;**
- **subdivision of Grade D and Grade F into Grade D1/Grade D2 and Grade F1/Grade F2, respectively;**
- **revision of Table 1;**
- **updating of guidance to take into account the publication of BS 5839-1:2017 and other standards published since the last full revision of BS 5839-6;**
- **new table on testing and servicing by grade;**
- **new recommendation to prevent blocking or delaying of fire alarm signals transmitted via social alarm systems in sheltered housing to an alarm receiving centre;**
- **increase in the recommended standard of protection in sheltered housing flats from Category LD2 to Category LD1;**

- **new recommendations for fire detection in supported housing;**
- **new recommendation that communal fire alarm systems should not normally be installed in purpose-built blocks of flats; and**
- **revised and expanded recommendations for Grade C.**

The Forward has been updated to give additional information on evacuation strategies and the provision of fire detection and fire alarm systems in purpose-built flats following the Grenfell Tower fire in London in 2017.

It clarifies that BS 5839-6 does not provide recommendations for fire detection systems which incorporate detectors in communal areas or ancillary accommodation within purpose built flats and that such systems are normally undesirable and can even lead to risk to occupants.

Any fire detection provided in communal areas or ancillary accommodation in purpose-built flats falls outside the scope of BS 5839-6.

1. Scope

The scope of BS 5839-6:2019 now includes "**Supported Housing**" and **premises used for self-catering holidays if occupied by not more than ten persons, and premises with short-term paying guests in the home of a resident operator with not more than eight guests. It is limited to premises in which guest accommodation is not located below a ground floor or above a first floor, and in which no storey is greater than 200 m^2 in area. For larger premises, the recommendations of BS 5839-1 apply.**

2. Normative references

Normative references have been updated to include:

BS 5446-2, *Fire detection and fire alarm devices for dwellings – Part 2: Specification for heat alarms*

BS 5446-3, *Fire detection and fire alarm devices for dwellings – Part 3: Specification for smoke alarm kits for deaf and hard of hearing people*

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*

BS 8591, *Remote centres receiving signals from alarm systems – Code of practice*

BS EN 54-26, *Fire detection and fire alarm systems – Part 26: Carbon monoxide detectors – Point detectors*

BS EN 54-29, *Fire detection and fire alarm systems – Part 29: Multi-sensor fire detectors – Point detectors using a combination of smoke and heat sensors*

BS EN 54-30, *Fire detection and fire alarm systems – Part 30: Multi-sensor fire detectors – Point detectors using a combination of carbon monoxide and heat sensors*

The following normative references have been removed:

BS 476 (relevant parts), *Fire tests on building materials and structures*

BS 5839-1:2013, *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 5979, *Remote centres receiving signals from fire and security systems – Code of practice*

BS EN 60730-1:2011, *Automatic electrical controls for household and similar use – Part 1: General requirements*

BS ISO 7240-8, *Fire detection and alarm systems – Part 8: Carbon monoxide fire detectors using an electro-chemical cell in combination with a heat sensor*

BS ISO 7240-15, *Fire detection and alarm systems – Part 15: Point type fire detectors using scattered light, transmitted light or ionization sensors in combination with a heat sensor*

LPS 1265: Issue 1.0, *Requirements and testing procedures for the LPCB approval and listing of carbon monoxide fire detectors using electrochemical cells.*
Garston: Building Research Establishment. 2004.

All other normative references remain unchanged.

3. Terms and definitions

The following terms and definitions have been included in BS 5839-6:2019:

0.1 addressable system

system in which signals from detectors, manual call points or any other devices are individually identified at the control and indicating equipment

- ***NOTE Most addressable systems are of the analogue type, in which a signal from each detector representing the value of the sensed phenomenon is individually processed, usually at the control equipment, with a view to enabling more than two output states to be given, representing normal, fire and at least one other***

abnormal condition. The purpose of analysis of the signal from each detector is often identification of conditions that are not representative of fire but that can result in a false alarm from a simple non-analogue ("two state") system.

0.2 alarm receiving centre (ARC)

continuously manned premises, remote from those in which the fire detection and fire alarm system is fitted, where the information concerning the state of the fire alarm system is displayed and/or recorded, so that the fire and rescue service can be summoned

0.3 aspirating smoke detection system

smoke detection system in which a sample of the atmosphere in the protected space is drawn by a fan or pump into a detector which may be remote from the protected space

0.4 audibility

property of a sound which allows it to be heard among other sounds

- ***NOTE Audibility depends upon the relative loudness and frequency content of the sound in comparison with other sounds which are present at the same time.***

0.5 automatic fire detection and fire alarm system

system (other than a single self-contained smoke or fire alarm) in which an alarm of fire can be initiated automatically

0.6 circuit

assembly of fire alarm components supplied from the same control equipment and protected against overcurrent by the same protective device(s) or current limitation arrangements

0.7 commissioning

process by which it is determined that the installed system meets the defined requirements

0.8 competent person

person with the relevant current training and experience, and with access to the requisite tools, equipment and information, and capable of carrying out a defined task

- ***NOTE For electrical installation and testing work, this is equivalent to the term "skilled person" as defined in BS 7671.***

0.9 designer

person or organization taking responsibility for design

0.10 dispersed social alarm (telecare) systems

system that provides facilities for social alarm initiation, signal transmission, alarm reception, reassurance and assistance for use by older and other persons considered to be living at risk within a single private dwelling, using a private phone line or IP connection to an ARC

0.11 fire detection zone

subdivision of the protected premises such that the occurrence of a fire within it will be indicated by a fire detection and fire alarm system separately from an indication of fire in any other subdivision

- ***NOTE A fire detection zone is separately indicated to assist in location of the fire, evacuation of the building and firefighting.***

0.12 fire engineering solution

application of science and engineering to the achievement of one or more fire safety objectives in such a way that the objectives are achieved without following, in full, prescriptive recommendations of a recognized code of practice

0.13 fire alarm signal

signal intended to indicate the occurrence of a fire

0.14 flame detector

automatic fire detector which responds to the radiation emitted by the flames from a fire

0.15 heat detector

automatic fire detector which responds to an increase in temperature

0.16 installation

work of fixing and interconnecting the components and elements of a system

- ***NOTE Installation may be carried out by one or more parties.***

0.17 installer

person or organization having responsibility for all or part of the process of installation

0.18 line detector

detector which responds to the phenomenon sensed in the vicinity of a continuous line

0.19 maintenance

work of inspection, servicing and repair necessary in order to maintain the efficient operation of the installed system

0.20 manual call point

component of a fire detection and fire alarm system which is used for the manual initiation of an alarm

0.21 mimic diagram

topographic representation of the protected premises and their subdivisions, using light-emitting indicators for each subdivision such that the indications of the fire detection and fire alarm system can be rapidly related to the layout of the premises

0.22 point detector

detector which responds to a phenomenon sensed in the vicinity of a fixed point

0.23 protection

presence of one or more automatic fire detector(s) able to initiate actions needed for the safety of life or property in the event of a fire

0.24 purchaser

person or organization taking primary responsibility for acceptance of and payment for the installed system

0.25 radio-linked system

fire detection and fire alarm system in which some or all of the interconnections between components are made by radio links

0.26 repair

non-routine work necessary to restore the efficient operation of the installed system

0.27 servicing

routine process of work on the system carried out at predetermined intervals

- ***NOTE For example, testing and cleaning.***

0.28 smoke detector

automatic fire detector sensitive to particulate products of combustion and/or pyrolysis suspended in the atmosphere (aerosols)

0.29 storey

part of a building comprising all the rooms that are on the same level including any gallery having an area of more than half that of the space into which it projects, unless it is accessible only for maintenance or repair

0.30 supported housing

housing (excluding sheltered housing) designed for vulnerable people with common characteristics, living as part of a community with support that is normally, but not necessarily, provided on a 24 h basis

- ***NOTE This includes housing for groups of people with learning or physical disabilities and mental health issues.***

0.31 tamper-proof battery

battery that is not designed to be removed

- ***NOTE For example, cells soldered to a printed circuit board.***

0.32 telecare-enabled fire detection and fire alarm system

fire detection and fire alarm system that is interfaced with a social alarm system (3.58), such that there is a facility for signal transmission, alarm reception, reassurance and, where necessary, assistance (e.g. summoning of the fire and rescue service)

0.33 user

person or organization having control of the building (or part of the building) in which the fire detection and fire alarm system is installed

0.34 visual alarm device

device which generates a flashing light to signal to the occupants of a building that a fire condition exists

0.35 voice alarm system

sound distribution system that provides means for automatically broadcasting audible speech messages and warning signals

- ***NOTE Voice alarm systems commonly include a facility for transmission of live voice messages, as well as automatically generated messages.***

7. Grades of System

Grades D1/D2 and F1/F2 are now defined within the commentary section 7.1. Grades B and E are no longer defined.

9. Choice of System

Table 1 in clause 9.2 has been totally re-written in order to clarify the Grade/Category requirements for different types of dwelling. Additional dwelling categories have also been added.

11. Location and siting of fire detectors

11.2p) Where photovoltaic power systems, boilers, and UPS systems are installed within loft spaces, a smoke detector/alarm or multi-sensor fire detector/fire alarm should be installed.

NOTE 3 To avoid unwanted alarms, this is typically an ionization chamber smoke detector or a multi-sensor detector with drift compensation.

This is a new recommendation to provide detection in loft spaces where electrical/heating equipment is installed.

13. Audible fire alarm devices and audibility

13.1.2 Audibility

In sheltered housing with a "stay put" strategy, care is necessary to ensure that, within flats, the sound pressure level of the communal fire alarm system is not high enough to cause confusion or a perceived need to evacuate. Local Government Association guidance [6] suggests that the sound pressure level in the hallway of residents' flats should not exceed 45 dBA.

New guidance has been provided in the commentary to Clause 13 in order to avoid confusion to residents in sheltered housing if the communal fire alarm operates and a "stay put" strategy is in operation.

13.2c) In all premises, all smoke alarms and heat alarms (if provided) in Grade D and Grade F systems should be interlinked, such that, when fire is detected by any smoke alarm or heat alarm, an audible fire alarm warning is given by all smoke alarms and heat alarms (if provided) in the premises.

NOTE 1 The above recommendation does not apply to smoke alarms or heat alarms in a mixed system (see 9.1.6) installed within an HMO if the smoke alarms and heat alarms are only intended to give a warning to occupants of the unit of accommodation in which fire occurs; under these circumstances only the smoke alarms and heat alarms (if provided) in that unit need be interlinked.

This clause has been revised to recommend that all heat and smoke alarms in Grade D and Grade F systems should be interlinked. In the previous edition of BS 5839-6 interlinking was only recommended in certain types of premises.

13.2d) In a Grade A or Grade C system, all fire alarm sounders within the same dwelling should give a fire alarm signal, regardless of where fire is detected in that dwelling.

The wording of this recommendation has been amended to clarify that all fire alarm sounders should operate simultaneously within a dwelling (i.e. a single unit of residential accommodation).

15. Power Supplies

15.2c) The standby supply should be capable of automatically maintaining the system in normal operation (whilst giving an audible and visual indication of mains failure) for a period of 72 h, after which sufficient capacity should remain to supply the maximum alarm load (see 3.38) for at least 15 min. However, if the premises are never left unattended (e.g. a mansion in which staff are always present and can arrange for rectification of a supply failure), or if the system has remote transmission to an ARC and transmits a "fire alarm fault" signal, the period of normal operation sustained by the standby supply may be reduced from 72 h to 24 h, provided that arrangements are in place to rectify the fault within the standby period. The capacity required to satisfy these recommendations should be calculated in accordance with Annex G.

NOTE 2 The standby period would not be affected by the presence of an emergency generator.

NOTE 3 To provide a battery that will operate a Grade A system for 72 h in the event of mains failure normally necessitates relatively large batteries, which might need to be housed in a separate supply unit. Any external cabling between the power supply unit (PSU) and the CIE needs to be duplicated for compliance with BS 5839-1 and needs to be fire resisting.

Clause 15.2c) has been amended to allow a reduced standby period of 24 hours where a Grade A system has remote transmission to an ARC and transmits a "fire alarm fault" signal. The fire alarm system does not necessarily need to transmit a "fire alarm" signal to an ARC unless recommended in Clause 20.2.

17. Control and indicating equipment

17.2c) Unless it is situated in a secure area or enclosed within a secure cabinet, CIE should normally be sited such that all controls are between 1.35 m and 1.45 m above floor level, to prevent casual tampering by children. A lower mounting height is, however, acceptable in premises occupied by wheelchair users.

The mounting height of CIE has been amended to bring it in line with the recommendations of Approved Document M of the Building Regulations.

20. Remote transmission of alarm signals

0.36 In sheltered housing, facilities should be provided for automatic transmission of fire alarm signals to the fire and rescue service (via a fire or social ARC), both in the case of fire alarm signals from individual dwellings and signals from any fire detection in the common parts. When a scheme manager is on site, the alarm signal may be transmitted to the scheme manager, but, if the scheme manager does not respond to the alarm signal within 30 s, the signal should be relayed automatically to the ARC. The facilities should automatically open a two-way speech channel to permit filtering of fire alarm signals.

The text of Clause 20.2c) has been revised to clarify what actions should occur where facilities have been provided for automatic transmission of fire alarm signals in sheltered housing complexes.

23 Installation, commissioning and certification

BS 5839-6:2013, clause 23.3d) recommended that "as fitted" drawings should be provided for Grades B, C, D & E systems. "As installed" drawings are now only required for Grade A systems.

26 Maintenance

A new table "Table 3" has been included in BS 5839-6:2019 to indicate the testing and servicing regimes required dependent upon the grade of system.