

Putting fire safety first



By Bob Cairney IEng MIEET
Technical Standards Adviser,
SELECT

What you need to know about the recent changes to the legislation and standards covering fire detection and alarm systems

Anyone who designs, commissions or installs fire detection and alarm systems in buildings needs to be aware of all the relevant legislation, standards and applicable guidance.

This knowledge is necessary in order to confidently certify compliance of fire detection and fire alarm systems upon completion of work. This is taking on a special importance following Dame Judith Hackitt's report into the Grenfell Tower disaster, which provided recommendations for a new regulatory framework in the UK.

It is obvious that when change occurs to legislation, standards or guidance, those undertaking fire safety work should ensure their knowledge is adequate to maintain a suitable level

of competence. This article outlines changes introduced in Scotland this year which will directly affect fire detection and fire alarm systems in domestic premises.

What has changed?

British Standard BS 5839-6 (covering recommendations for systems in domestic premises) has undergone a full revision. BS 5839-6:2019 was published on 30 April 2019. This replaces the 2013 version of the standard and contains a number of significant changes.

The Housing (Scotland) Act 1987 (Tolerable Standard) (Extension of Criteria Order) 2019 was published in February this year following a Scottish Government consultation on fire safety.

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It introduces requirements for all homes in Scotland to have satisfactory provision for detecting and warning of fire to ensure they are safe for occupants. This comes into effect from 1 February 2021.

The Housing (Scotland) Act 2006 (Modification of the Repairing Standard) Regulations 2019 were amended due to the above extension to the tolerable standard. The modification of the repairing standard removes an existing requirement for “satisfactory provision for detecting and warning of fire” from this standard which only applied to private rented housing. After 1 February 2022, the requirement for satisfactory provision for detecting and warning of fire will be in the tolerable standard which applies to all housing.

What you need to know

BS 5839-6:2019 now provides recommendations for fire detection and alarm systems in new and existing supported housing, self-catering premises and premises with short-term paying guests, such as holiday flats and B&Bs. This is in addition to existing recommendations and guidance for systems in new and existing domestic premises and sheltered housing.

Updating references to other standards has also been a part of the revision, and BS 5839-1:2017 is now included. This is a particularly relevant standard if designing a fire detection and fire alarm system for larger domestic premises (with a floor area greater than 200m²). The recommendations within

that standard apply where a Grade A system has been specified – this is the grade recommended in BS 5839-6:2019 which is deemed to be suitable for that size of premises.

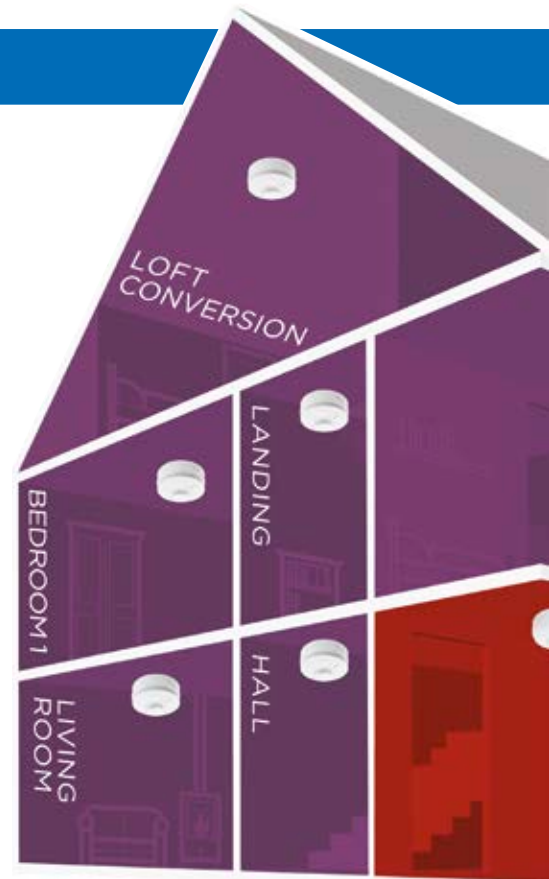
Following the tragic events at Grenfell Tower, there is new guidance included for communal fire detection systems.

It explains that fire detection and fire alarm systems are commonly provided in blocks of flats for the purpose of operating smoke control systems and, if designing such systems, BS 7273-6 is the appropriate standard.

The guidance advises that as a consequence of cladding on blocks of flats being found to be non-compliant with the requirements of the building regulations, fire detection and fire alarm systems are being installed in communal areas of some high-rise residential buildings. However, it is stressed that such systems are only intended as a temporary measure pending removal of the cladding and these systems are outside the scope of BS 5839-6:2019.

Compartmentation between occupancies is normally sufficient to ensure that a fire is contained in the dwelling of origin and will allow other occupants to remain safely in their own flats. BS 5839-6 therefore does not provide any recommendations for fire detection systems in the communal areas of blocks of flats as the ‘Stay put’ policy is deemed to provide sufficient protection.

The guidance, however, goes on to state that where such communal fire detection systems can be justified or are requested, the recommendations



ABOVE: All alarms should be ceiling mounted

in BS 9991 and BS 5839-1:2017 can be followed (BS 9991 provides guidance on evacuation strategies and associated detection and warning systems for purpose-built blocks of flats).

Revised grades of system

Probably the most significant change in BS 5839-6:2019 is associated with the revision of the defined grades of systems, which are given for the purposes of specifying fire detection and fire alarm systems and their associated engineering parameters. Grade B and E systems are no longer defined systems, mainly because they were not in common use. Grade D and Grade F are each now split into two sub-grades. This means that a Grade D system can now be either a Grade D1 or a Grade D2. Likewise, Grade F systems can now be either a Grade F1 or a Grade F2.

When deciding upon a suitable grade and category of system, the designer should always ensure that the level of protection provided is related to the nature of the premises, the level of fire risk and the characteristics of the likely occupants of the premises – a higher fire risk will require a high reliability of system. The recommendations provided in the amended Table 1 in BS 5839-6 help simplify selection of an appropriate grade and category of system for typical

WHAT THE REVISED GRADES MEAN

- **Grade A:** Separate detectors, sounders and central control and indicating equipment with back-up power supply that conforms to British Standards BS EN 54-4
- **Grade C:** A system of fire detectors and alarm sounders that are mains powered with back-up power supply and central control equipment
- **Grade D1:** A system of one or more mains-powered detectors, each with an integral standby supply consisting of a tamper-proof battery or batteries
- **Grade D2:** A system of one or more mains-powered detectors, each with an integral standby supply consisting of a user-replaceable battery or batteries
- **Grade F1:** A system of one or more battery-powered detectors powered by a tamper-proof primary battery or batteries
- **Grade F2:** A system of one or more battery-powered detectors powered by a user-replaceable primary battery or batteries



FIND OUT MORE

Fire safety standards can be obtained via the British Standards Institute (BSI) website at www.bsigroup.com/en-GB/

For building warrant work in Scotland, the relevant BSD technical handbooks are at www.gov.scot/publications/building-standards-2017-domestic/ and www.gov.scot/publications/building-standards-2017-non-domestic/

Those involved specifically with housing in Scotland can access Scottish Government guidance on the Housing (Scotland) Act 1987 (Tolerable Standard) (Extension of Criteria) Order 2019 and the Housing (Scotland) Act 2006 (Modification of the Repairing Standard) Regulations 2019 at www.gov.scot/publications/fire-and-smoke-alarms-tolerable-standard-guidance/ and www.gov.scot/publications/fire-safety-guidance-private-rented-properties/

the installation of solely battery-powered alarms does not satisfy the guidance for compliance with Building (Scotland) Regulations. This type of supply is however now being allowed in existing dwellings in Scotland under Scottish Government guidance produced for implementing the

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classes of premises. An extract from the table is shown below.

Building regulations

The changes in grades specified in BS 5839-6:2019 must also be considered when installing new systems where a building warrant applies. In Scotland, compliance with Building (Scotland) Regulations is required for installations in new buildings and conversions. Scottish Building Standards Division guidance to achieve compliance is given in the domestic and non-domestic technical handbooks.

In a dwelling, the domestic technical handbook requires a Grade D system comprising at least one smoke alarm installed in the principal habitable room, at least one smoke alarm in every circulation space (such as hallways and landings) on each storey, at least one smoke alarm in every access room serving an inner room and at least one heat alarm installed in every kitchen.

The locations described requiring protection by a smoke/heat alarm are similar to a Category LD2 system as specified in BS 5839-6:2019. However, when providing a Grade D system, the designer will now have to consider the new sub-grades and the likely use of the premises – if it’s a rented property then a mains-powered alarm with tamper-proof battery back-up will be required. Where a building warrant is applicable,

“Those undertaking fire safety work should ensure that their knowledge is adequate”

Table 1– Minimum grade and category of fire detection and fire alarm system for protection of life in typical premises

Class of premises	Minimum grade and category of system for installation in:			
	New or materially altered premises		Existing premises	
	Grade	Category	Grade	Category
Single-family dwellings and shared houses with no floor greater than 200m² in area				
Owner-occupied bungalow, flat or other single-storey unit	D2	LD2	F2	LD3
Rented bungalow, flat or other single-storey unit	D1	LD2	D1	LD2
Owner-occupied maisonette with no floor above 4.5m from ground level or owner-occupied two-storey house	D2	LD2	F2	LD3
Rented maisonette with no floor above 4.5m from ground level or rented two-storey house	D1	LD2	D1	LD2
Rented maisonette with any floor above 4.5m from ground level and with alternative means of escape	D1	LD2	D1	LD2
Any maisonette with any floor above 4.5m from ground level and no alternative means of escape	D1	LD1	D1	LD1
Owner-occupied three-storey house	D2	LD2	F2	LD2
Rented three-storey house	D1	LD2	D1	LD2
Owner-occupied four (or more) storey house	A	LD2	D2	LD2
Rented four (or more) storey house	A	LD1	D1	LD1

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extension of the tolerable standard and for the modification to the repairing standard to the Housing (Scotland) Act.

Government guidance

Looking at Table 1 in BS 5839-6 in relation to existing premises, the minimum recommended grade and category of system for an owner-occupied two-storey house is a Grade F2, Category LD3 system. For a rented two-storey house it is a Grade D1, Category LD2 system.

However, the notes to Table 1 in BS 5839-6:2019 highlight that: “In Scotland, under the Housing (Scotland) Act 1987 (Tolerable Standard) (Extension of Criteria) Order 2019 [11] Grade F1, Category LD2 systems are required as a minimum in all existing dwellings by 2 February 2021.” This applies to all tenures of housing including private housing, private rented housing and social rented housing.

Scottish Government guidance states that “satisfactory equipment” to comply with the tolerable standard comprises one smoke alarm installed in the room most frequently used for general daytime living purposes, one smoke alarm in every circulation space on each storey, one heat alarm in every kitchen and all smoke and heat alarms should be ceiling mounted and interlinked. Interlinking of alarms can be by wiring or by wireless technology

to form an integrated system of protection in the home. It is also highlighted that when adding to an existing hardwired system, care should be taken to ensure that all alarms are interlinked, with all alarms sounding when any one device is activated. Mains-operated alarms (with battery



ABOVE: The remains of Grenfell Tower following the devastating fire in 2017

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back-up) are permitted, and tamper-proof long-life lithium battery alarms are also allowed. Alarms should also be regularly maintained and tested in accordance with manufacturer’s instructions. The standard required to

meet the tolerable standard also now satisfies the repairing standard.

Making the grade

However, the Scottish Government guidance for satisfactory equipment in existing premises is not satisfied by simply complying with the recommendations in Table 1 of BS 5839-6:2019.

For example, a Grade F2, Category LD3 system is recommended for an owner-occupied two-storey house, but this would not be suitable as the Scottish Government guidance requires a greater level of protection. To comply, at least a Grade F1, Category LD2 system would be required. A similar issue exists with the recommendations that are given for a rented two-storey house. Table 1 recommends a Grade D1, Category LD2 system but this actually provides a higher reliability than the requirement for compliance with the Scottish Government’s guidance.

Both private and social landlords will therefore have to take a considered view on the minimum requirements when they specify or agree on what is a suitable grade of system in their properties for compliance with the tolerable standard.

This would not preclude a higher specification than the minimum required but they may want to specify a higher reliability system, such as a Grade D system (mains powered with battery back-up alarms).

TO CONCLUDE

At the beginning of this article, it was stressed that adequate knowledge of relevant legislation, standards and guidance is an important part of being competent to undertake fire detection and fire alarm system work. This is a necessary part of confirming conformity of a system which will be required by enforcing authorities, such as local authority building control and local licensing boards. This may also be a way of being able to

prove compliance with legislation and standards in the event of any future liability claim that might result from a fire incident or a contractual dispute.

The recommendations given for installation, commissioning and certification of the systems in British Standards such as BS 5839-1:2017 and BS 5839-6:2019 should therefore be closely followed.

It has also been highlighted in this article that a continuous approach to competence is now

being recommended as part of developing fire safety for those who live and work in buildings.

Companies and installers should try to ensure that at all times they have knowledge of the legislation, standards and guidance and that they adopt a proactive approach to ongoing education and training.

Certainly, as a minimum starting point, copies of the standards relevant to the type of work being undertaken – including BS 5839-1:2017 and

BS 5839-6:2019 – would be essential and should be readily accessible for those who are undertaking such work.

To conclude, a commitment to training and to continued professional development may be of significant benefit to all parties involved to ensure fire safety within buildings. This is something the fire industry will no doubt be looking at closely as part of an industry response to the proposed new regulatory framework.