

## Overview of BS 5839-6 Revision

**BS5839-6:2019** is a full revision of the standard, which supersedes BS 5839-6:2013 (now withdrawn) and introduces the following principal changes :-

### Overview

- 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 recommend 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**

## Definitions

**3.14 domestic premises – dwellings** (see 3.15) and buildings used as sheltered housing (see 3.54)

**3.15 dwelling** – unit of residential accommodation occupied (whether or not as a sole or main residence):-

a/ by a single person or by people living together as a family; or

b/ by not more than 6 residents living together as a single household, including household where care is provided for residents; or

c/ by persons who do not live together as a family, but who live in self-contained single-family flats; maisonettes or bedsits within the unit; or

d/ as a shared house

*NB The definitions in c) and d) relate only to some types of house in multiple occupations (HMO) and specifically exclude hostel type accommodation, for which BS 5839-1 is more appropriate. They can, however, include houses with long-term lodgers*

**3.62 tamper-proof battery** – battery that is not designed to be removed

Eg cells soldered to a printed circuit board

## New Grading System

- **Grade A:** a fire detection and fire alarm system, which incorporates CIE conforming to BS EN 54-2 and power supply equipment conforming to BS EN 54-4, and which is designed and installed in accordance with all the recommendations of BS5839-1:2017, Section **1** to Section **4** inclusive, except those in the following clauses, for which the corresponding clauses of this part of BS 5839 need to be substituted.

The grades are defined as follows:-

<b>Clause/subclause of BS 5839-1:2017</b>	<b>Corresponding clause/subclause of BS 5839-6</b>
<b>16</b> Audible alarm signals	<b>13</b> Audible fire alarm devices and audibility
<b>18</b> Fire alarm warnings for people who are deaf and hard of hearing	<b>14</b> Fire alarm warnings for people who are deaf and hard of hearing
<b>20</b> Manual call points	<b>18</b> Manual call points
<b>25.4e)</b> Capacity of standby batteries	<b>15.2c)</b> Capacity of standby batteries
<b>27</b> Radio linked systems	<b>21</b> Radio linked systems

- **Grade B:** Not in use
- **Grade C:** A system of fire detectors and alarm sounders (which may be combined in the form of smoke alarms) connected to a common power supply, comprising the normal mains and a standby supply, with central control equipment

- **Grade D1:** A system of one or more mains-powered detectors ( [see 3.12](#) ) , each with a tamper-proof standby supply consisting of a battery/s ( [see 3.62](#) )
  
- **Grade D2:** A system of one or more mains-powered detectors ( [see 3.12](#) ) each with an integral standby supply consisting of a user-replaceable battery/s
  
- **Grade E:** Not in use
  
- **Grade F1:** A system of one or more battery-powered detectors ( [see 3.12](#) ) powered by a tamper-proof primary battery/s ( [see 3.62](#) )
  
- **Grade F2:** A system of one or more battery-powered detectors ( [see 3.12](#) ) powered by a user-replaceable primary battery/s
  - Reference Grade D and Grade F systems, where more than one smoke alarm is installed, the smoke alarms normally need to be interlinked ( [see 13.2c](#) )
  - Any heat alarms also need to be interlinked with the smoke alarms

**TABLE 1 - Min grade and category of fire detection and fire alarm system for protection of life and 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
<b>Single-family dwellings<sup>A)</sup> and shared houses<sup>B)</sup> with no floor greater than 200 m<sup>2</sup> in area</b>				
Owner-occupied <sup>C)</sup> bungalow, flat or other single-storey unit	D2	LD2 <sup>D)</sup>	F2 <sup>E), F), G)</sup>	LD3 <sup>F), G), H)</sup>
Rented bungalow, flat or other single-storey unit	D1	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Owner-occupied <sup>C)</sup> maisonette with no floor above 4.5m from ground level or owner-occupied two storey house	D2	LD2 <sup>D)</sup>	F2 <sup>E), F), G)</sup>	LD3 <sup>F), G), H)</sup>
Rented maisonette with no floor above 4.5m from ground level or rented two storey house	D1	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>

Rented maisonette with any floor above 4.5m from ground level and with alternative means of escape	D1	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Any maisonette with any floor above 4.5m from ground level and no alternative means of escape	D1	LD1	D1	LD1
Owner-occupied <sup>C)</sup> three-storey house	D2	LD2 <sup>D)</sup>	F2 <sup>E), F), G)</sup>	LD2 <sup>D)</sup>
Rented three-storey house	D1	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Owner-occupied <sup>C)</sup> four ( or more) storey house	A	LD2 <sup>D)</sup>	D2 <sup>I)</sup>	LD2 <sup>D)</sup>
Rented four ( or more) storey house	A	LD1 <sup>J)</sup>	D1	LD1 <sup>J)</sup>
<b>Single-family dwellings <sup>A)</sup> and shared houses <sup>B)</sup> with one or more floors greater than 200 m<sup>2</sup> in area</b>				
Owner-occupied <sup>C)</sup> bungalow , flat or other single-storey unit	D2	LD2 <sup>D)</sup>	D2 <sup>I)</sup>	LD3 <sup>F),G),H)</sup>
Rented bungalow, flat or other single storey unit	D1	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>

Owner-occupied <sup>C)</sup> maisonette with no floor above 4.5m from ground level or owner-occupied two storey house	A	LD2 <sup>D)</sup>	D2 <sup>I)</sup>	LD3 <sup>F),G),H)</sup>
Rented maisonette with no floor above 4.5 m from ground level or rented two storey house	A	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Rented maisonette with any floor above 4.5m from ground level and with alternative means of escape	A	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Any maisonette with any floor above 4.5m from ground level and no alternative means of escape	A	LD1	D1	LD1
Owner-occupied <sup>C)</sup> three storey house	A	LD2 <sup>D)</sup>	D2 <sup>I)</sup>	LD2 <sup>D)</sup>
Rented three storey house	A	LD2 <sup>D)</sup>	D1	LD2 <sup>D)</sup>
Owner-occupied <sup>C)</sup> four ( or more) storey house	A	LD2 <sup>D)</sup>	A	LD2 <sup>D)</sup>
Rented four (or more) storey house	A	LD1 <sup>J)</sup>	A	LD1 <sup>J)</sup>
<b>Houses in multiple occupation<sup>K), L)</sup> (HMOs)</b>				

HMOs of one or two storeys with no floor greater than 200m <sup>2</sup> in area	D1	LD1 <sup>J)</sup>	D1	LD2 <sup>D)</sup>
Other HMOs :				
Individual dwelling units, within the HMO, comprising a single room, which include cooking facilities (bedsit)	D1 <sup>M)</sup>	LD1 <sup>J),N)</sup>	D1 <sup>M)</sup>	LD1 <sup>J),N)</sup>
Individual dwelling units, within the HMO, comprising a single room, which DO NOT include cooking facilities (bedsit)	D1 <sup>M)</sup>	LD1 <sup>J)</sup>	D1 <sup>M)</sup>	LD1 <sup>J)</sup>
Individual dwelling units, within the HMO comprising two or more rooms	D1 <sup>M)</sup>	LD2 <sup>D)</sup>	D1 <sup>M)</sup>	LD2 <sup>D)</sup>
Communal areas of the HMO	<i>Grade A, Category LD2, with detectors sited in accordance with the recommendations of BS 5839-1:2017 for a Category L2 System<sup>O)</sup></i>			
<b>Sheltered Housing<sup>P)</sup></b>				
Individual dwelling units	D2	LD1 <sup>J)</sup>	D2	LD2 <sup>Q)</sup>
Communal areas	<i>Grade A in accordance with the recommendations of BS 5839-1:2017 for a Category L4 or L5 system<sup>R)</sup></i>			



<b>Self-catering premises or premises with short-term paying guests</b>	D1	LD1 <sup>J)</sup>	D1	LD1 <sup>J)</sup>
<b>Supported Housing</b>				
Single-storey	D1	LD1 <sup>J)</sup>	D1	LD1 <sup>J)</sup>
Two or more storeys and not more than four bedrooms	D1	LD1 <sup>J)</sup>	D1	LD1 <sup>J)</sup>
Two or more storeys and more than four bedrooms	A	LD1 <sup>J)</sup>	A	LD1 <sup>J)</sup>

---

A) Including premises with long-term lodgers, but not boarding houses, the latter of which are outside the scope of this part of BS 5839.

B) Houses shared by no more than six persons, generally living in a similar manner to a single family (e.g. houses rented by a number of students).

C) Including premises in which lodgers live as their principal home.

D) Heat detectors should be installed in every kitchen. A smoke detector should be installed in the principal habitable room (see clause 3.47 of BS 5839-1:2017) Where more than one room might be used as the principal habitable room, a smoke detector should be installed in each of these rooms. The detector in the principal habitable room (but not the kitchen) may alternatively be a carbon monoxide detector. However,

consideration needs to be given to the potential for false alarms from a smoke detector in the lounge if a kitchen opens directly into, or is combined with, the lounge

E) A Grade F1 system should be installed if there is any doubt regarding the long-term suitability or reliability of a battery-powered system, i.e. the ability to replace batteries.

F) Where electrical work such as a rewire is undertaken, a Grade D (D1 or D2) Category LD2 system should be installed

G) 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

H) Category LD2 if a risk assessment justifies the provision of additional detectors (see Clause 4)

I) A Grade D1 System should be installed if there is any doubt regarding the long-term suitability or reliability of a battery powered system, i.e. the ability to replace batteries

J) Detectors may normally be omitted from roof voids unless there are specific significant fire hazards such as gas boilers or electrical equipment for photovoltaic systems.

K) Other than houses with long-term lodgers and houses shared by no more than six persons, generally living in a similar manner to a single family (e.g. houses rented by a number of students)

L) In England and Wales, under the Housing Act 2004 (8), certain houses converted into blocks of flats prior to the Building Regulations 1991 (12) coming into force are treated as HMOs.

M) The detectors in individual dwelling units may be incorporated within the system installed in communal areas, subject to compliance with 12.2 b)

<sup>N)</sup> In individual bedsits which include cooking facilities, a heat or multi-sensor fire alarm should be fitted. In the case of a multi-sensor fire alarm, the provision of an alarm silence facility would be beneficial.

<sup>O)</sup> Heat detectors should be installed in every communal kitchen. Heat or smoke detectors, as appropriate (taking into account the fire risk and the potential for false alarms), should be installed in every communal lounge.

<sup>P)</sup> See also [20.2 c\)](#)

<sup>Q)</sup> Where sheltered housing is upgraded, electrical work such as a rewire is undertaken, or smoke alarms are replaced, a Grade D (D1 or D2) Category LD1 system should be installed.

<sup>R)</sup> The provision for detection should be based on a fire risk assessment. Normally, communal lounges, kitchens, laundries etc., should be protected, and where these facilities are provided, it might be appropriate for smoke detection to be installed throughout the circulation areas. Such detection could be extended to include detection within dwelling units, subject to the need to filter false alarms from dwelling units. Where there are no significant communal facilities, and the sheltered housing is similar to a general needs block of flats, there is normally no need for any fire detection within circulation areas; fire detection can be restricted to individual dwelling units. Further guidance can be found in NFCC document *Fire Safety in Specialised Housing* [\(7\)](#)

## Grade of System

System grade relates to the engineering aspects of the fire detection and fire alarm system. Higher grades of system tend to provide a greater level of control and monitoring of the system, or greater reliability and availability to perform correctly in the event of a fire. The grade of system that needs to be installed depends on the nature of the premises, the level of fire risk and the characteristics of the likely occupants.

Grade F2 systems, comprising one or more battery-powered smoke alarms, are the least reliable in the long term because of the need for battery replacement. Reliability can be enhanced by the use of a Grade F1 system (see 7.1) For new dwellings, a Grade D system (in which the normal supply for each smoke alarm is derived from the mains electricity supply and a standby supply is provided) or higher is justified.

However, because of their low cost and ease of installation, Grade F systems (comprising battery-powered smoke alarms) might be suitable for installation in existing premises ( see13.2c) Their reliability can be improved by use of batteries that have a long anticipated life and that cannot be removed by the user. Nevertheless, Grade F systems are generally not appropriate in premises in which the fire risk to occupants is high, nor where there cannot be a reasonable certainty that, when the premises are occupied, batteries will be replaced within a short time (typically no more than 5 days) of a battery fault warning indication. Otherwise, a system in which the normal supply is derived from the mains needs to be used (eg a Grade D System)

Where there is a need for readily accessible control of the fire detection and fire alarm system, a Grade C system or higher might be provided. Where the fire risk calls for a high standard of system monitoring and availability, or if premises are very large or are subdivided into a significant number of dwelling units (eg in an HMO or sheltered housing) a Grade A system is required.

If the purpose of the system is property protection, fire insurers might require a Grade A system. However, for smaller properties, a Grade C system might be sufficient