Guidance Note

Fire Industry Association

Leading Excellence in Fire Since 1916

Guidance Document on selection and specification of fire alarm category in accordance with BS 5839-1

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1. Introduction

"Categories" of fire alarm system were first introduced into BS 5839-1 in 1988 - when they were described as "Types" of system. In the 2002 revision of BS 5839-1, two new Categories were added, L4 and L5. The definitions of the Categories remain the same in the current (2025) version of the standard.

However, there still remains confusion, particularly amongst users, specifiers and fire risk assessors, regarding the application of these categories and the responsibility for specifying the appropriate category for any building.

The purpose of this guidance document is to clarify the responsibility for identifying the appropriate category of system, and to give general guidance on the typical category that is appropriate for different building uses.

This guide incorporates extracts from *The Design, Installation, Commissioning and Maintenance of Fire Detection and Fire Alarm Systems by Colin S. Todd,* whose assistance in preparing this guide is gratefully acknowledged.

2. The Categories

BS 5839-1 defines eight categories of system, according to whether the system is purely manual or incorporates automatic fire detection, and, in the latter case, the purpose and extent of the automatic fire detection.

The eight categories of system are defined as follows:

Category M systems: These are manual systems and therefore, incorporate no automatic fire detectors.

Category L systems: These are automatic fire detection systems intended for the protection of life. They are further subdivided into the following subcategories of system as follows:

Category L1: Systems installed throughout all areas of the building.

Category L2: Systems installed only in defined parts of the building, including all parts necessary to satisfy the recommendations of the code for a Category L3 system. The additional areas protected, over and above those protected in a Category L3 system, are those in which there is either high likelihood of fire starting or a high risk to life if fire does start.

Category L3: Systems designed to give warning of fire at an early enough stage to enable all occupants other than, possibly those in the room of fire origin, to escape safely, before the escape routes are impassable due to the presence of fire, smoke or toxic gases. To satisfy this objective, fire detectors need to be installed in escape routes and, other than in the case of very short corridors, in all rooms or areas that open onto the escape routes.

Category L4: Systems installed within those parts of the escape routes comprising circulation areas and circulation spaces, such as corridors and stairways.

	Category L5:	Systems in which the protected area(s) and/or the location of detectors is designed to satisfy a specific fire safety objective (other than that of a Category L1, L2, L3 or L4 system).
Category P systems:	These are automatic fire detection systems intended for the protection of property. There are then two subcategories, namely:	
	Category P1:	Systems installed throughout all areas of the building.
	Category P2:	Systems installed only in defined parts of the building.

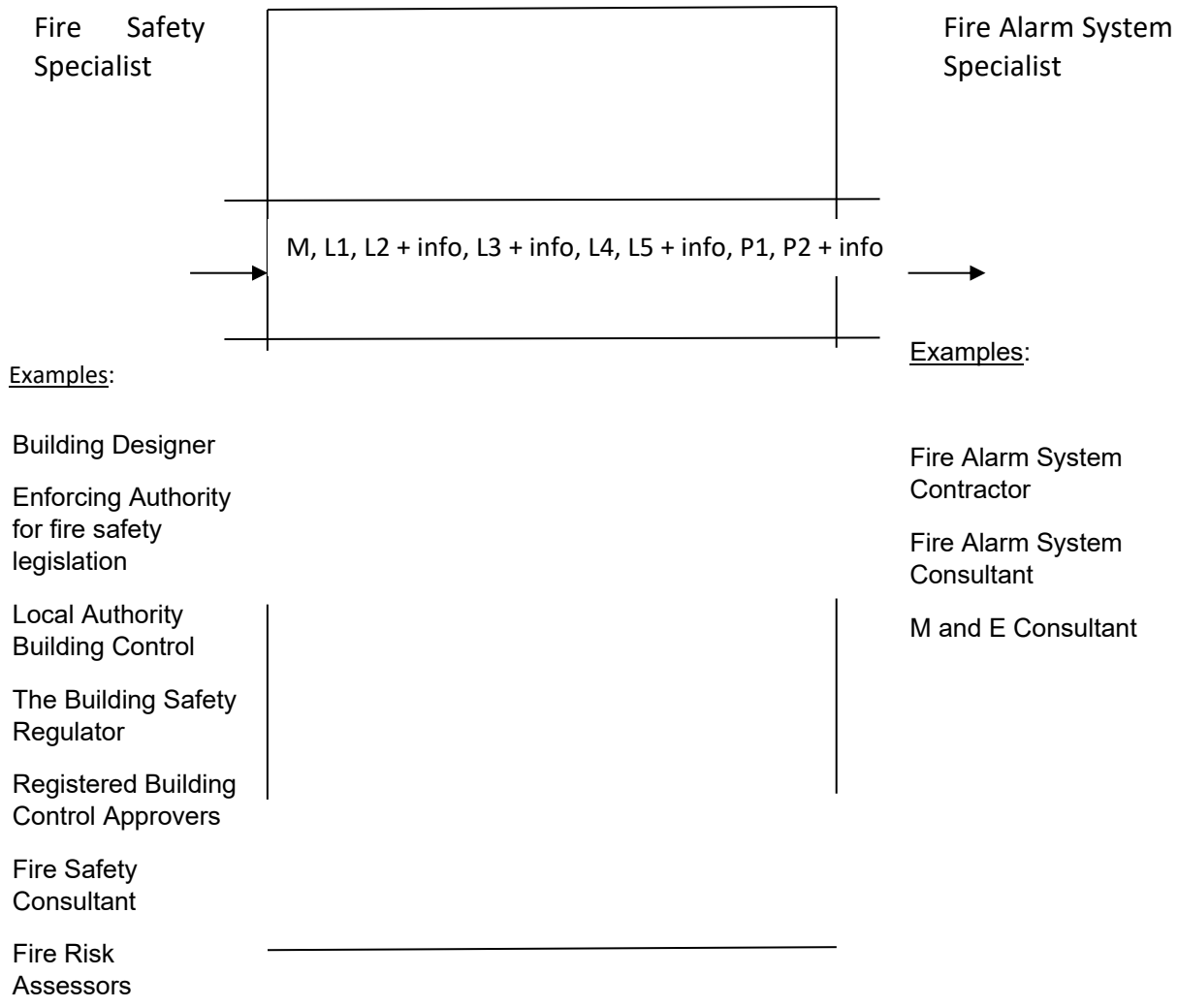
3. Responsibility for Selection of System Category

Since there are eight system categories defined in BS 5839-1, a reference to BS 5839-1 without a reference to a system category, such as in a purchase specification, an enforcement notice under fire safety legislation, a fire risk assessment, or requirements of insurers would be virtually meaningless. In each of these cases, the category of system to be installed should always be included in a specification. In addition, other than in the case of a Category M, L1, P1 and L4 system, further information needs to be included regarding the areas of the building that are to be protected by automatic fire detection. In a Category M system, there are no such areas, while all areas are protected in a Category L1 or P1 system, and only the escape routes are protected in a Category L4 system.

It should be stressed that the responsibility for determining the appropriate system category for any application does not rest with the designer of the fire alarm system, such as a fire alarm contractor, who is not expected to have sufficient expertise in the principles of fire safety legislation, fire safety or fire risk assessment to come to a decision in this respect. Although many fire alarm designers may fortuitously have such expertise, the decision rests with the fire safety specialist, such as fire engineers, fire risk assessors or enforcing authorities, rather than the fire alarm system specialist.

Thus, it may be considered that there is something of a “firewall” between the role of the fire safety specialist and the fire alarm system specialist. The information that is communicated between these two parties is the system category (see Figure 1). Moreover, it will be noted from Figure 1 that, in the case of certain categories, additional information also needs to be communicated.

Figure 1



The additional information that needs to be provided in the case of certain system categories is as follows:

Category L2:	The rooms or areas that need to be protected, over and above those that require to be protected in a Category L3 system, and the type of detector to be provided.

Category L3:	The type of detector to be provided in rooms or areas opening onto escape routes.
Category L5:	The rooms or areas of the building that are to be protected, and the types of detectors to be installed. This decision may arise from a fire risk assessment but it is a misconception that this will always be the case; for example, it may simply be that detectors are required to operate fire protection measures (such as fire doors) or are being installed in lieu of vision panels to give an early warning to those in an inner room of a fire in an access room.
Category P2:	The rooms or areas that are to be protected and the types of detector that are to be installed. This decision may arise from a form of property protection, or business interruption risk assessment or may be dictated by the requirements of property or business interruption insurers.

Although the system purchaser or their agent should inform the system designer as to which system category is required (e.g. via a tender specification), in practice this commonly does not occur as a result of a lack of understanding on the part of users and specifiers of the principles described above. If this does not occur, BS 5839-1 recommends that the designer make the purchaser or the purchaser's agent clear of the category of system that is proposed prior to an order for the system being placed. This is to avoid disputes during the course of a contract regarding the form of system that is required and the areas that should be protected. In such cases, the FIA recommends that contractors protect their liability by recommending to purchasers that, before placing an order for the system, they should seek further advice from a competent person or the relevant enforcing authority to ensure that the system proposed satisfies the requirements of legislation and the insurer of the property.

4. Selection of System Category

Given that purchasers and specifiers are often unable to articulate the category of system required and any additional information that should be provided, it is of value for contractors and designers to have a good awareness of the category of system that will commonly be appropriate. The guidance below is intended to assist in this respect.

A Category M system is generally sufficient to satisfy the requirements of fire safety legislation in workplaces in which no-one sleeps. In the case of premises in which people sleep, quite extensive automatic fire detection is normally required. Generally, this will be a Category L2 or L1 system. In premises with cellular accommodation such as hotels, there is, in fact, very little difference between

a Category L2 and a Category L1 system. In a hotel or similar sleeping risk, the bedroom floors are generally protected by a system that is effectively equivalent to a Category L3 system, but additional detection is provided throughout the premises, thereby making the system a Category L2 or Category L1 system.

In the sleeping risks, previous versions of BS 5839-1 accepted the use of heat detectors within bedrooms. However, the 2025 version of BS 5839-1 now expresses a preference for types of fire detection other than heat detection in bedrooms, thereby reflecting what is, in any case, the most common current custom and practice. This is because, to protect individuals asleep in the bedroom, heat detectors would be somewhat slow to operate.

This does not imply that, in systems with heat detectors in bedrooms of existing hotels, the heat detection needs to be replaced. However, when these systems are substantially, or completely, replaced, or are extended, preference ought to be given to use of smoke, multi-sensor or carbon monoxide fire detectors, unless a fire risk assessment justifies the use of heat detection.

Note: BS 5839-6 contains recommendations for a "mixed system" in a house in multiple occupation (HMO). In these systems, there is a communal "Grade A" system, which is, effectively, a BS 5839-1 system (with some minor variations). In these systems, the communal system may extend into the flats or bedsits, in which a heat detector is installed in the hallway. That arrangement does not conflict with the above preference of BS 5839-1 that heat detectors are not used in sleeping accommodation. In this context [or design], the heat detector is installed purely to warn people, beyond the flat of fire origin, of a significant fire. Protection of the individuals from a fire in their own accommodation is, additionally, provided by the installation of domestic smoke alarms within that accommodation; these are not interlinked with alarm devices in any other accommodation.

Possibly, the least likely sub-category of Category L system to be specified would be a Category L4 system, in which automatic fire detection is provided only in escape routes. To ensure adequate warning of occupants before escape routes are made impassable by the presence of smoke (as would normally be required in a sleeping risk), at least a Category L3 system would normally be required.

However, there may be circumstances in which a Category L4 system would be appropriate; for example (as noted above), although workplaces in which no-one sleeps need only have a manual fire alarm system to comply with legislation, some employers provide limited automatic fire detection to enhance the safety of occupants beyond the minimum legislation requirement. This may occur, for example, because some employees might work alone in a large building after normal office hours. If the offices are cellular in nature, a Category L3 system rapidly becomes akin to a Category L1 system, at very significant expense. It is sometimes argued that the installation of detectors only within escape routes provides significant enhancement in the safety of those employees at a much lower cost.

It is becoming increasingly common for automatic fire detection to be provided as one component of a fire engineering solution, in which a "package" of fire precautions is provided to satisfy the life safety objectives of legislation, without necessarily following, exactly, the "prescriptive" Codes of Practice that apply under the legislation. Fire risk assessments carried out to satisfy legislation can also identify the need for some form of fire detection, perhaps within a localised area, that does not always need to comply with the recommendations of BS 5839-1 for a Category L1, L2, L3 or L4 system.

Such a system would, therefore, be a Category L5 system.

As noted above, the purpose of a Category L5 system is to support a specified fire safety objective or address a particular fire safety problem. It should, therefore, be possible to articulate the exact objective that the Category L5 system is designed to achieve. Again, this is solely the responsibility of the fire safety specialist, rather than the designer of the fire alarm system.

However, a Category L5 system can, in some cases, be very simple in nature. For example, in the design of means of escape, there is a fundamental principle that occupants of an "inner room", from which escape is possible only by passing through a further ("access") room, must have adequate means of warning them of a fire in the access room. This is most commonly achieved by the provision of a vision panel between the inner room and the access room. However, an alternative is to provide smoke detection within the access room. This principle could result in a very small number of detectors (even one) in the largest of buildings. The resulting Category L5 system would normally be provided in conjunction with a manual fire alarm system. The resulting system would then be described as a Category M/L5 system.

It follows from the above that it should *never* be the case that a specifier simply calls for a Category L5 system without information as to the areas that are to be protected by automatic fire detection. It should *never* be the case that the fire alarm contractor needs to carry out a fire risk assessment to determine the design of a Category L5 system. It is much more likely to be the case that a fire risk assessment has identified and determined the need for fire detection in only specific areas. However, as previously stated, it is not always the case that the need for a Category L5 system arises specifically from a fire risk assessment.

While Category P systems may well greatly enhance life safety within a building, that is not their objective, which is purely protection of property or protection against interruption to the normal operations of the company as a result of fire. By providing early warning of a fire, enabling early extinguishment, it might be said that a Category P system, as in the case of any automatic fire detection system, also protects the environment by reducing the pollutants that will be produced by the fire and the amount of contaminated fire-fighting run-off water. For the highest level of protection, a Category P1 system would be provided, particularly in buildings that are critical to the operations of the company. In a Category P2 system, fire detection is installed in areas of high fire hazard or in areas in which the risk to property or business continuity from fire is high.

Annex A of BS 5839-1, which is reproduced as Appendix 1 of this guide, gives advice on the category of system that is typically installed in various types of premises. As the Annex is purely informative, its purpose is not to recommend these systems for the types of premises in question but simply to provide information on custom and practice, and on the conventional interpretation of fire safety legislation. More specific guidance on the systems necessary for compliance with legislation is contained in the next subsection of this guidance document.

5. Legislative Requirements

In virtually all new buildings, a fire alarm system will be required by building regulations.

In England and Wales, guidance on compliance with the Building Regulations 2010 is given in Approved Document B, which subscribes to the view that automatic fire detection systems are not normally needed in non-residential occupancies. However, Approved Document B acknowledges that, even in non-residential occupancies, fire detection may be needed:

- to compensate for some departure from the guidance elsewhere in Approved Document B (e.g. relating to means of escape from fire)
- as part of the operating system for certain fire protection systems, such automatic door releases or smoke control systems
- where a fire could break out in an unoccupied part of the premises and prejudice the means of escape from any occupied parts of the premises
- in a building with phased evacuation, in which case, a system complying, at least, with the recommendations for Category L3 is advocated

In Scotland, guidance on compliance with the Building (Scotland) Regulations 2004 is contained in the technical handbooks that support the Regulations. The Scottish guidance is more onerous for some premises than the equivalent guidance in England and Wales. For example, automatic fire detection is recommended for entertainment and assembly buildings if there are more than 60 occupants; for the largest premises, a Category L1 system is recommended. Similarly, automatic fire detection is recommended for shops with more than 100 occupants; for the largest premises, a Category L3 system is recommended. For specific new buildings in Scotland, the relevant technical handbook should be consulted. It should also be noted that the Scottish technical handbook specifies the remote transmission of alarms to an alarm receiving centre in the case of residential care homes, hospitals and shopping centres.

The Northern Ireland Technical Booklet E provides guidance on compliance with the Building Regulations (Northern Ireland) 2000. For non-domestic premises, the technical booklet requires only a system complying with BS 5839-1, although there are specific situations in which automatic fire detection is recommended.

For existing buildings, Government guidance on compliance with fire safety legislation gives advice on fire alarm systems. Separates suites of guidance apply to England and Wales, Scotland and Northern Ireland. At the time of writing, the suite of guidance applicable to England and Wales is in the course of revision by the Ministry of Housing, Communities and Local Government (MHCLG).

APPENDIX 1

ANNEX A OF BS 5839-1:

Annex A (informative)

Choice of appropriate category of a fire detection and fire alarm system

Table A.1 describes the category of system that is typically installed in various types of premises

Decisions regarding the appropriate type of category for any specific building type rests with the authorities for enforcing the in the building: there can be more than one such enforcing authority.

Table A.1 — Choice of appropriate category of a fire detection and fire alarm system

Type of premises	Typical category of system	Comments
Common places of work such as offices, shops, factories, warehouses and restaurents	M or P2/M or P1/M	A category M system can normally be expected to satisfy the requirements of legislation. It is, however, often combined with a Category P system to satisfy the requirements of insurers, as company policy for protection of assets or to protect against business interruption.
Hotels, hostels, student accommodation, houses in multiple occupation and other similar premises with sleeping accommodation	L1 or L2	In bedroom areas, the design requirements are usually based on the recommendations of a Category L3 system. Detectors are, however, installed in most other rooms and areas, as a fire in almost any other area of the building could pose a threat to sleeping occupants; the system category is, therefore, at least L2. In practice few, if any, areas are left unprotected and the system category is effectively L1.
Large public houses with no sleeping accommodation	M or P2/M	Category M/P2 is sometimes required by insurers, particularly in premises with a kitchen containing frying equipment and/or ovens.
Public houses with sleeping accommodation	L2	_
Schools other than small single storey schools with less than 160 pupils	M or M/P2 or M/P2/L4 or M/P2/L5	System category is normally based on a fire risk assessment. In many schools a category P system is installed to combat the hazard of arson. In schools that are partially occupied (i.e. during evening

		classes or community use), a category L4 or L5 system is sometimes appropriate
Hospitals	L1 (with possible minor variations)	Detailed guidance on areas to be protected and possible variations is given in HTM-05-03 Part B (N1) (in England and Wales) or SHTM 82 (N2) (in Scotland)
Healthcare premises without sleeping accommodation, e.g. walk-in healthcare centres	L2 or L3	Detailed guidance on areas to be protected and possible variations is given in HTM-05-03 Part B (N1) (in England and Wales) or SHTM 82 (N2) (in Scotland).
Places of assembly (e.g. cinemas, theatres, nightclubs, exhibition halls, museums and galleries, leisure centres and casinos):		
Small premises (e.g. accommodating less than 300 people)	M	-
Other places	L1 to L4	L1 systems are often provided in large or complex buidlings
Transportation terminals	M/L5	-

Table A.1 — Choice of appropriate category of a fire detection and fire alarm system (continued)

Type of premises	Typical category of system	Comments
Covered shopping centres	L1 to L3	The exact design needs to be determined on a case-by-case basis and often forms part of a fire engineering solution.
Residential care premises	L1	
Prisons	M/L5	
Phased evacuation buildings	L3	
Buildings in which other fire precautions, such as means of escape, depart from recognized guidance	M/L5	Automatic fire detectors are sited in such a way as to compensate for the lower standard in other fire precautions.
Buildings with inner rooms (see 3.32), where there is inadequate vision between the inner room and the access room	M/L5	Smoke detectors are sited in the access room.
Buildings in which automatic fire detection is required to operate other fire protection systems (e.g. magnetic door holders)	M/L5	Automatic fire detectors need to be sited such that cool smoke cannot pass below the level of the detectors that cause release of the magnetic door holders, and through the (still open) doors.
Situations in which fire could readily spread from an unoccupied area and prejudice means of escape from occupied areas	M/L4 or M/L5	Custom and practice does not involve siting automatic fire detectors in all unoccupied areas, such as plant rooms and storage areas.
Any building in which automatic fire detection is provided as a requirement of a property insurer	M/P1 or M/P2	

DISCLAIMER

The information set out in this document is believed to be correct in the light of information currently available but it is not guaranteed and neither the Fire Industry Association nor its officers can accept any responsibility in respect of the contents or any events arising from use of the information contained within this document.

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