BS 5839-1:2025
FIRE DETECTION & FIRE ALARM SYSTEMS

A practical website guide to the principal requirements, changes from BS 5839-1:2017, system categories, detection, alarm devices, cabling, false alarms, commissioning, testing and maintenance.



About this guide

This guide summarises important and notable provisions of BS 5839-1:2025.
It is a practical overview and does not reproduce the British Standard.

Scope and key topics

System categories	Overview of fire detection and alarm system categories and their application.
Detection and alarm devices	Selection, siting and installation of detectors, manual call points, sounders and visual alarms.
Cabling	Cabling requirements, circuit integrity and segregation.
False alarms	Measures to reduce unwanted alarms and improve reliability.
Commissioning	Verification, testing and handover requirements.
Testing and maintenance	Ongoing inspection, testing and maintenance to ensure continued compliance and performance.

PREPARED FOR WEBSITE USE

Emergi-Safe Ltd

This guide summarises important and notable provisions of BS 5839-1:2025. It is a practical overview and does not reproduce the British Standard.

Edition status BS 5839-1:2025 came into effect on 30 April 2025 and superseded BS 5839-1:2017. It is the current code of practice for design, installation, commissioning and maintenance of fire detection and fire alarm systems in non-domestic premises.

Important caveat This document is a guide only. It must not be used instead of BS 5839-1:2025 or the applicable fire strategy, legislation, Building Regulations, manufacturer instructions, certification requirements or competent professional design.

BS 5839-1:2025

EXECUTIVE SUMMARY – WHAT CHANGED IN 2025



BS 5839-1:2025 is a full revision of the 2017 edition. The most important changes affect the structure of the standard, extensions and modifications, variations, manual call-point siting, sleeping accommodation, detector placement, false alarms, remote transmission and ongoing maintenance.

The major themes

Topic	2017	2025
Structure	Established clause structure with lettered subclauses.	Major renumbering/restructure, with a new numbering format and new Section 7.
Extensions / modifications	Existing design principles applied to alterations.	Dedicated Section 7 introduced.
Variations	Variations subject to the standard's process.	Certain variations are explicitly unacceptable.
Manual call points	Established siting rules.	Siting simplified, including specific phased-evacuation stair guidance.
Sleeping rooms	Existing detection recommendations.	Greater preference for automatic fire detection over reliance on heat detection/ sprinklers.
Detector obstructions	Rules distributed through the standard.	Clearer treatment of ceiling obstructions and closely spaced beams.
Voids	Existing provisions.	More explicit treatment of void depth and detector position.
False alarms	Existing section structure.	Reorganised into responsibility, causes, investigation, design and measures.
Remote transmission	Existing recommendations.	Signal handling and ARC information are more explicitly specified.
Visual alarms	Existing guidance.	Stronger focus on premises-specific visual alarm needs.
Maintenance	Successive visits should not exceed six months.	Approximately six months; 5–7 months acceptable in practice.
Competence	Competence addressed.	Competent-person definition and continuing competence/CPD are clearer.

Important

An earlier-edition installation is not automatically unsafe solely because the standard has been revised. Existing systems should be assessed in context, while new work and modifications should follow the current applicable requirements.

2017 → 2025: PRINCIPAL CHANGES

A practical comparison of the changes most relevant to building owners, facilities teams, designers, installers and maintenance providers.



Key changes from 2017 to 2025

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BS 5839-1:2025
SYSTEM CATEGORIES – L, P AND M



System category should be derived from the fire strategy and the objective of the system. Categories describe the extent and purpose of automatic detection and manual alarm provision; they do not by themselves determine whether a system is legally required.

System categories and their purpose

Category	General purpose	Typical extent
M	Manual fire alarm system.	Manual call points and alarm devices; no automatic detection as the defining requirement.
L1	Comprehensive life protection.	Automatic detection throughout all areas, subject to permitted exclusions.
L2	Enhanced life protection.	Automatic detection to L3 areas plus additional specified higher-risk areas.
L3	Standard life protection.	Automatic detection in escape routes and rooms opening onto them to support early warning.
L4	Escape-route protection.	Automatic detection primarily within escape routes.
L5	Specified-risk life protection.	Detection designed around a particular risk identified by the fire strategy.
P1	Comprehensive property protection.	Automatic detection throughout the protected premises/area, subject to permitted exclusions.
P2	Specified property protection.	Automatic detection in defined areas where property protection is required.

Category selection should not be made simply because "L1 is better". The correct category depends on fire risk, occupancy, evacuation strategy, compartmentation, management arrangements and property objectives.

Sleeping accommodation



The 2025 revision strengthens the approach to detection in rooms where people sleep. The design should consider the risk of a fire developing while occupants are asleep and the suitability of automatic detection technologies. The revised guidance specifically places greater emphasis on automatic fire detection rather than relying on heat detectors or sprinkler heads in sleeping rooms.

BS 5839-1:2025
DETECTOR SITING, SPACING AND CEILING HEIGHTS



Many familiar detector-spacing figures remain relevant in 2025, but the revision gives clearer treatment of obstructions, voids, beams and ceiling geometry.

Detector spacing and height guidance

Detection	Key design reference
Point smoke detector	Typical maximum radial coverage 7.5 m, with up to 5.3 m to a wall in the standard flat-ceiling case.
Heat detector	Typical maximum radial coverage 5.3 m, with up to 3.75 m to a wall in the standard case.
Point smoke detector height	Generally applicable maximum 10.5 m; up to 12.5 m for up to 10% of ceiling area under stated conditions.
Heat — Class A1	Generally applicable maximum 9.0 m; up to 10.5 m for up to 10% of ceiling area under stated conditions.
Other heat classes	Generally applicable maximum 7.5 m; up to 10.5 m for up to 10% of ceiling area under stated conditions.
Optical beam smoke	Much greater ceiling heights are possible depending on sensitivity and system design.
Aspirating smoke	Height limits vary significantly with system class and sampling-hole arrangement; specialist design is required.

Obstructions — a major 2025 practical point

- An obstruction close to the ceiling can need to be treated as a wall where the gap to the ceiling is less than 300 mm and the obstruction is deeper than 10% of the overall ceiling height.
- Partitions or storage racks reaching within 300 mm of the ceiling can be treated as walls extending to the ceiling.
- Closely spaced beams and joists are addressed explicitly; where cell dimensions exceed the relevant coverage, detection may need to be installed in every cell or the cell arrangement altered.
- Voids receive clear treatment according to depth and detector technology. Optical-beam and aspirating systems have additional provisions.

These figures are design references, not a substitute for the full detector-siting rules. Ceiling height, ventilation, beams, partitions, obstructions, detector type and fire risk all influence the final design.

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CABLING, POWER SUPPLIES AND SYSTEM RESILIENCE



The 2025 revision brings together and clarifies recommendations around system power supplies, cable installation and interfaces. The design should consider what happens when normal power, a circuit or a cable is damaged.

Key design guidance

Design consideration	What should be demonstrated
Primary supply	Appropriate supply and isolation/identification in accordance with the standard and applicable electrical requirements.
Standby supply	Adequate capacity for quiescent and alarm loads for the applicable system design.
Cable selection	Cables and installation methods suitable for required fire survival, environmental and mechanical conditions.
Circuit segregation	Avoid a single fault disabling excessive parts of the system; maintain required independence.
Loop/circuit integrity	Short/open-circuit fault arrangements considered against the system architecture.
Interfaces	Fire alarm outputs to other systems compatible, supervised where required and tested end-to-end.
Alarm transmission	Remote transmission paths and receiving-centre arrangements meet applicable performance requirements.

Remote alarm receiving centres



IET commentary identifies maximum 90-second fire-signal transmission and 3-minute failure indication for Category L systems, and 120 seconds/31 minutes respectively for Category P systems. The standard also recommends ARC information about the premises, including whether people sleep there, and ideally the device type and number that triggers the alarm.

Power isolation and remote access



Recommentations for isolation of the mains supply have been clarified and consolidated. Where modern systems use network connectivity or remote access, security and controlled access should be considered so connectivity does not compromise integrity, availability or accountability.

The fire alarm system should be treated as a critical infrastructure, particularly where it interfaces with other life-safety systems.

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FALSE ALARMS, UNWANTED SIGNALS AND MODIFICATIONS



The 5025 edition reorganises false-alarm guidance into responsibility, causes, investigation, design process and measures to limit false alarms and unwanted fire alarm signals.

A practical false-alarm process

Record	Log location, initiating device, circumstances, cause where known and corrective action.
Investigate	Repeated activations should trigger root-cause investigation rather than repeated detector replacement.
Design	Account for dust, steam, aerosols, cooking vapour, exhaust gases, temperature variation and other environmental influences.
Technology	Multi-sensors and other detector technologies should be selected for the risk and manufacturer's application data.
Management	Contractors, tenants, hot works, cooking, maintenance and building works should be controlled.
Escalation	Repeated or serious false alarms should trigger a documented design or management review.

Extensions and modifications — new Section 7

One of the most significant structural changes is a dedicated Section 7 covering extensions and modifications. Building alterations can affect detector coverage, zones, sound pressure, visual alarms, interfaces, cause-and-effect and standby capacity.



Key questions for common changes

Change	Questions to ask
New partition/wall	Does it create a new room or obstruct detector coverage?
Ceiling change	Do detector height, spacing and obstruction rules still work?
New doors/access control	Are alarm interfaces and escape arrangements affected?
Sleeping-area refurbishment	Is detection technology still appropriate under the 2025 approach?
New plant/ventilation	Could airflow affect detector response?
Floor extension	Are zones, power supplies, sounders, MCPs and transmission capacity adequate?
Change of use	Does the system category remain appropriate?

Building alterations can affect detector coverage, zones, sound pressure, visual alarms, interfaces, cause-and-effect and standby capacity. Always assess changes against the current requirements.

BS 5839-1:2025
COMMISSIONING, DOCUMENTATION, INSPECTION AND MAINTENANCE



The 2025 edition reinforces the need for a complete information trail from design through commissioning and ongoing maintenance. The system should be understandable, testable and maintainable by competent people throughout its life.

Handover documentation

Design information	Design information, drawings and zone plans.
Cause-and-effect	Cause-and-effect information and interface details.
Equipment schedules	Equipment schedules and device identification.
Certificates	Design, installation and commissioning certificates.
Deviations and variations	Records of deviations/variations and the basis for acceptance.
Power-supply information	Battery/power-supply information and relevant calculations.
Test results	Test results, commissioning records and configuration data.
Operating instructions	Operating and maintenance instructions.
Logbook and records	Logbook and ongoing test/inspection records.

A complete and accurate information trail helps ensure the fire alarm system remains compliant, reliable and maintainable throughout its life.

BS 5839-1:2025 COMMISSIONING, DOCUMENTATION, INSPECTION AND MAINTENANCE (CONTINUED)



The 2025 edition reinforces the need for a complete information trail from design through commissioning and ongoing maintenance. The system should be understandable, testable and maintainable by competent people throughout its life.

Routine user testing

The responsible person should have a planned routine test regime. A common weekly user test is carried out from a manual call point, with different call points rotated so the system is progressively checked. Records should be maintained in the logbook. The exact procedure should follow the current standard, system design and manufacturer's instructions.

Periodic inspection and servicing

BS 5839-1:2025 states that successive inspection and servicing visits should be undertaken at approximately six-month intervals. Industry guidance commonly treats a visit between five and seven months after the previous visit as an acceptable practical window.

Competence

The 2025 edition gives greater clarity to the competent person: suitable training or qualifications, knowledge and practical experience, together with necessary instructions. Continuing professional development is relevant to maintaining competence.

Maintenance is not just a panel test

Servicing should examine detectors, call points, sounders, visual alarms, batteries, power supplies, interfaces, transmission paths, cause-and-effect, faults, false alarms and the installation condition. Defects should be recorded and appropriately addressed.

BS 5839-1:2025
WHAT IT MEANS FOR BUILDING OWNERS

For facilities and compliance teams, the 2025 edition reinforces a simple principle: the fire alarm system must remain appropriate to the building as it is actually occupied and operated.



Key questions for building owners

Question to ask your contractor	Why it matters
What category is the system and why?	The category should link to fire strategy and risk, not simply an old certificate.
Was the design completed to BS 5839-1:2025?	The 2017 edition has been superseded.
What happens after a building alteration?	New Section 7 requires extensions and modifications to be properly considered.
Are sleeping areas appropriately detected?	The 2025 revision strengthens automatic detection considerations.
Are detector obstructions assessed?	Partitions, racks, beams and ceiling features can alter coverage.
How are false alarms investigated?	The revised guidance gives a clear structured process.
Are MCPs correctly located?	Particularly important in phased evacuation buildings.
Are visual alarms provided where needed?	Occupant needs, including hearing impairment and lone occupancy, should be considered.
Are remote monitoring arrangements compliant?	Transmission times, ARC information and fault reporting are addressed more explicitly.
Are service visits within 5–7 months?	This reflects the current practical servicing interval framework.
Do we have complete handover information?	Drawings, cause-and-effect, certificates and records support maintenance and future alterations.

The fire alarm system must remain appropriate to the building as it is actually occupied and operated.

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EMERGI-SAFE – FIRE ALARM SERVICES



Emergi-Safe can support clients with fire alarm design, supply and installation, system upgrades, inspection and maintenance coordination, and integration with wider fire-safety requirements. Projects should be approached from the fire strategy and required category through to detector layout, alarm devices, interfaces, commissioning and ongoing maintenance.

Our fire alarm services

Design	Fire alarm design to BS 5839-1:2025, based on fire strategy and required system category.
Supply and installation	Supply and installation of fire alarm systems and alarm devices.
System upgrades	Upgrades to existing systems to meet current requirements.
Inspection and maintenance	Inspection and maintenance coordination to keep systems compliant and reliable.
Integration	Integration with wider fire-safety requirements, including interfaces with other life-safety systems.
End-to-end support	From detector layout, alarm devices and interfaces through to commissioning and ongoing maintenance.

Important legal and technical caveat

This document is a guide only and must not be used instead of BS 5839-1:2025. It is a practical website overview and does not reproduce the British Standard. It is not a substitute for the current standard, fire strategy, Building Regulations, Regulatory Reform (Fire Safety) Order 2005, Fire Safety Act 2021, Fire Safety (England) Regulations 2022, BS EN 54 series, BS 7671, manufacturer instructions, certification requirements or competent professional design. Where a detailed design, modification or compliance decision is required, the current standard and actual project evidence should be consulted.



Sources and further reading

Primary reference	BSI, BS 5839-1:2025 Fire detection and fire alarm systems for buildings — Design, installation, commissioning and maintenance of systems in non-domestic premises — Code of practice. BSI confirms that the 2025 edition supersedes BS 5839-1:2017.
Additional technical cross-checks	IET Wiring Matters commentary; Fire Industry Association guidance on the changes; NSI Technical Bulletin 0070; and BSI published product information. This guide paraphrases requirements rather than reproducing copyrighted standard text.

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