RRO COMPLIANCE

The Regulatory Reform (Fire Safety) Order (RRO) became law on 1st October 2006 - Legally you must comply!

What is the RRO?
Fire authorities no longer issue fire certificates and those previously in force will have no legal status. The Regulatory Reform (Fire Safety) Order (RRO) replaces most legislation with one new order. It means that any person who has some level of control in premises must take steps to reduce the risk from fire, consider how to contain a fire should one break out and they also make sure people can safely escape if there is a fire.

- **All fire alarm designs should be based on a Fire Risk Assessment**
- **All Fire Risk Assessments should be carried out by a competent person**
- **Fire Risk assessments must be reviewed annually**

Where does the order apply?
Virtually all premises and nearly every type of building, structure, and open space.

What constitutes a Fire Risk Assessment?

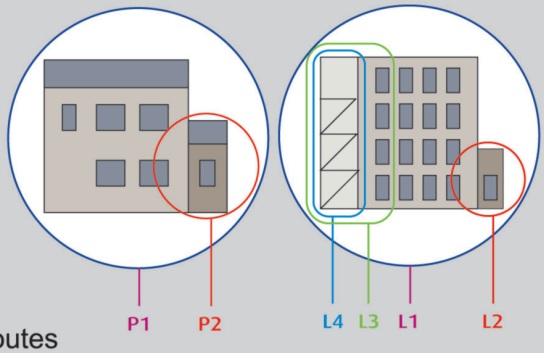
- Identifying fire hazards such as sources of ignition, fuel or oxygen
- Identifying all people at risk in and around the premises
- Evaluating the risk of a fire starting or the risk to people from a fire
- Removing or reducing fire hazards or risks to people from a fire
- Protecting people by providing fire precautions
- Recording any major findings
- Preparing an emergency plan
- Informing and instructing any relevant people
- Providing training for staff and guests
- Reviewing the fire risk assessment regularly and make changes where necessary
- Keeping accurate fire risk assessment records

These regulations apply to virtually all premises and nearly every type of buidling structure/open space.

****All fire alarm designs should be based on a Fire Risk Assessment****
This guide is intended to be an aid to designers and installers of fire detection systems. It is not to be used as a substitute for BS5839 which shoud be read in full. In order to help identify the relevant sections, each dagram in this guide includes a reference to BS5839 Part 1.

Fire Alarm and Detection systems are categorised in the following way:

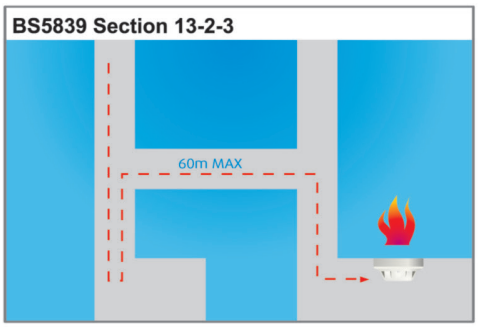
Property Protection Fire Systems
P1 AFD installed throughout all areas
P2 AFD installed only in defined areas



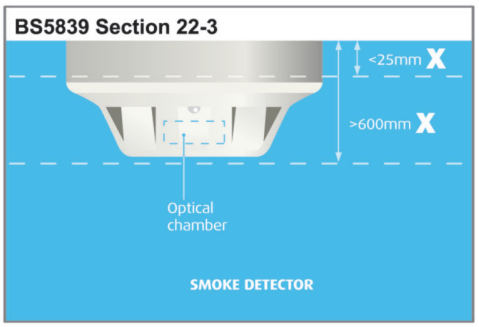
Life Protection Fire Systems
L AFD designed to primarily protect Human Life.
L1 AFD installed throughout all areas
L2 AFD installed in defined areas in addition to L3
L3 AFD installed in escape routes and rooms opening onto these routes
L4 AFD installed in escape routes comprising circualtion areas and spaces such as corridors and stairways
L5 A non-prescriptive system in which protected area(s) and/or the location of detectors is designed to satisfy a specific fire risk objective (other than that of L1 to L4)

M System design to be operated manually (no AFD)

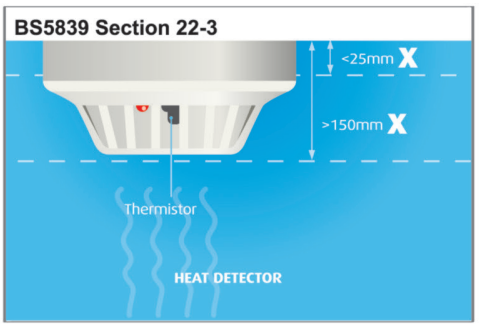
*AFD Automatic Fire Detection



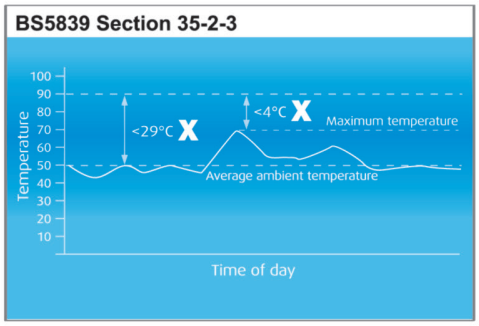
A person searching a zone for a fire in a non-addressable fire system should not have to travel more than 60m to identify the source of a fire.



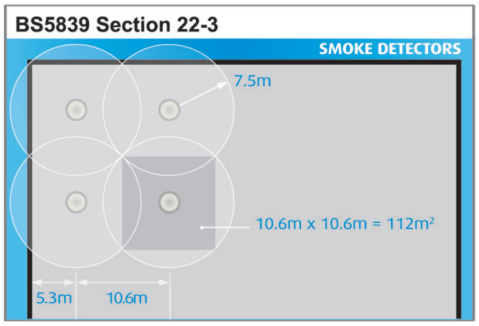
The sensing element of a smoke detection device (optical smoke chamber) should not be less than 25mm below ceiling, and not greater than 600mm below ceiling.



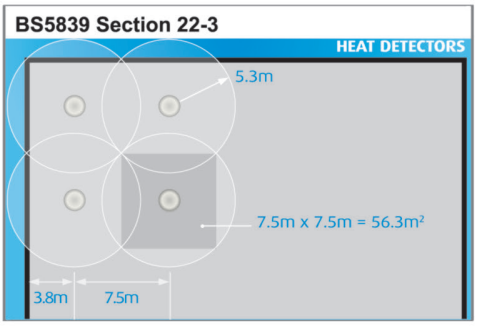
The sensing element of a heat detection device should not be less than 25mm below ceiling, and not greater than 150mm below ceiling.



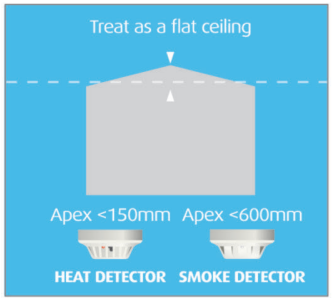
The minimum static response to heat devices should not be less than 29oc above the average ambient temperature, or less than 4oc above the highest temperature the device can expect to experience.

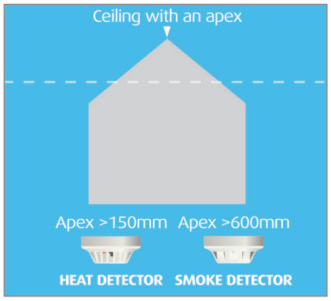


When mounted on a flat ceiling, smoke detection devices have an individual coverage of 7.5 radius. However these radii must overlap to ensure there are no 'blind spots'. Therefore individual coverage can be represented by a square measuring 10.6x10.6m giving an actual coverage of 112m2 per device.



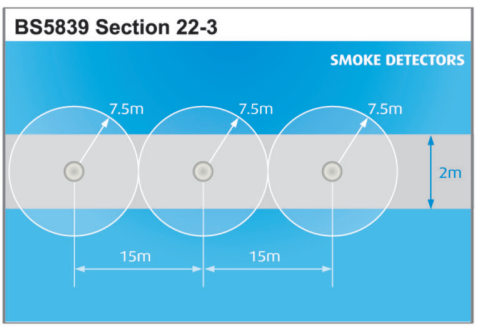
When mounted on a flat ceiling, heat detection devices have an individual coverage of 5.3 radius. However these radii must overlap to ensure there are no 'blind spots'. Therefore individual coverage can be represented by a square measuring 7.5x7.5m giving an actual area coverage of 56.3m2 per device.



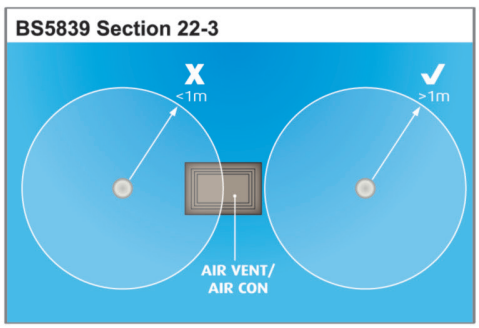


For ceilings that feature an apex: as long as the height of the apex from the rest of the ceiling is less than 150mm for heat detectors and less than 600mm for smoke detectors, these can be treated the same as flat ceilings. For higher apexes, a device should be installed at the highest point. The distance to adjacent devices can be increased by 1% per degree of angle of the roof up to a maximum of 25%

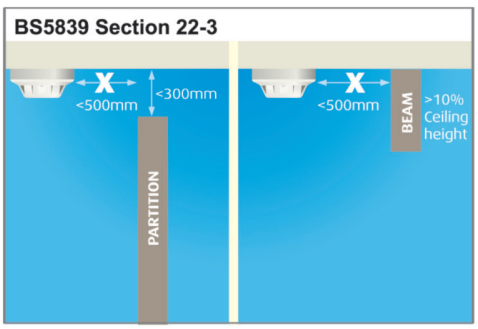
Detector	Ceiling heights (m)	
	General limits	Rapid attendance (Category P systems only)
Heat detectors EN 54-5		
Class A1	9.0	13.5
Other classes	7.5	12.0
Point smoke & CO fire detectors	10.5	15.0
Aspirating Smoke Detection Systems (category 1)	Normal 10.5 Enhanced 12.0 Very high 15.0	Normal 15.0 Enhanced 17.0 Very high 21.0
Optical beam smoke detectors EN54-12	25.0	40.0



In corridors less than 2m wide the horizontal spacing of detectors may be increased, the areas of coverage need not overlap as in the case of a room. Any corridor over 2m wide is deemed a room and device spacing should follow the standard for rooms (as above).
* Please Note, heat detectors are **not** recommended for use in corridors that are escape routes

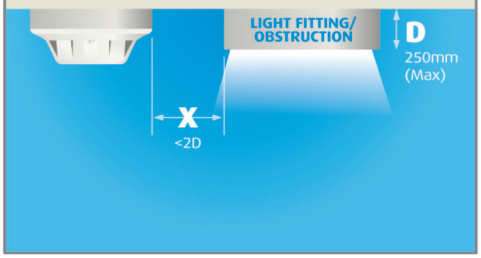


Do not place site detectors less than 1m from air inlets of air circulating units.



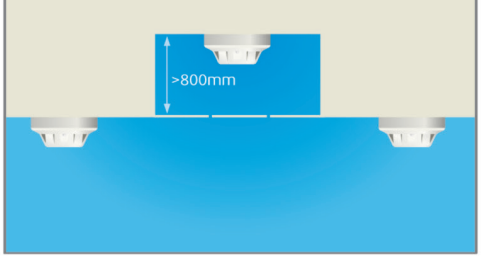
A device should not be mounted within 500mm of any obstruction. If the top of a solid partition is less then 300mm from the ceiling then treat it as a wall. Ceiling obstructions such as high beams should be treated as walls if deeper than 10% of the ceiling height.

BS5839 Section 22-3



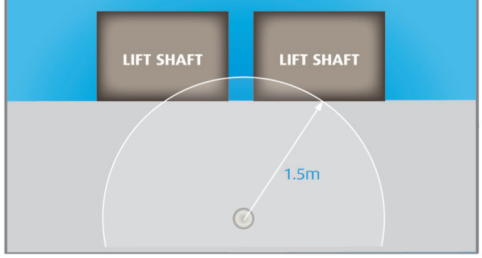
Never mount devices closer than twice the depth of light fittings or other obstructions on the ceiling.

BS5839 Section 22-2



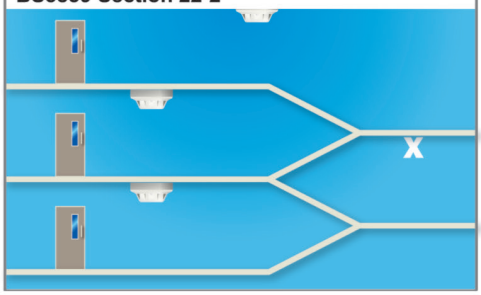
Voids less than 800mm in height do not need independent coverage, unless fire or smoke is able to spread from one area to another through the void or risk assessment shows Automatic Fire Detection to be necessary.

BS5839 Section 22-2



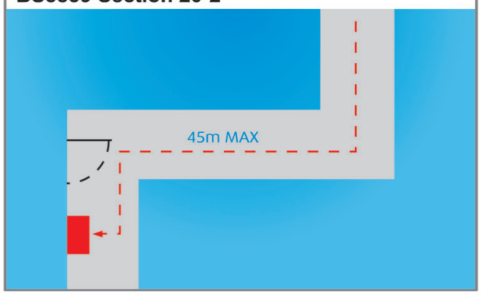
Vertical Shafts like lifts and stairways should have a device mounted within 1.5m of any opening.

BS5839 Section 22-2



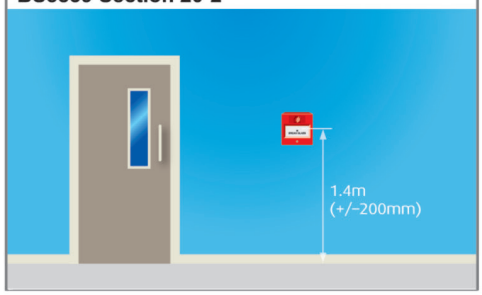
Enclosed stairways should have a detector at the top of the stairway and of each main landing.

BS5839 Section 20-2



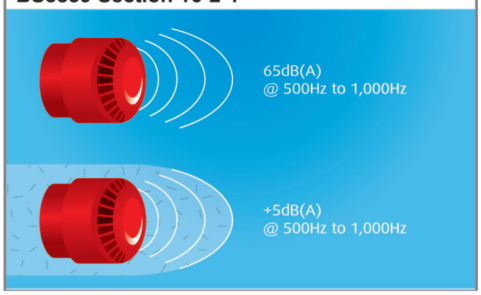
A person should not have to travel more than 45m along an escape route to reach a Manual Call Point (25m if disabled person to operate, or rapid fire development is likely). Manual Call Points should be sited at all stair wells and exits from the building.

BS5839 Section 20-2



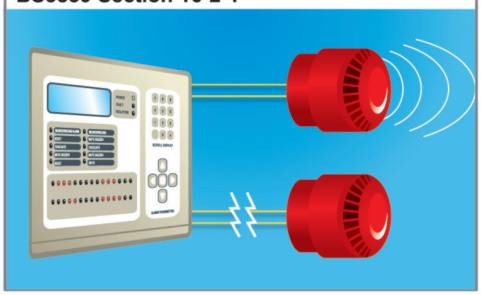
The centre of the frangible element of the manual call point should be positioned 1.4m (+/-200mm) from floor level. (Unless a wheel-chair user is likely to be the first person to raise the alarm).

BS5839 Section 16-2-1



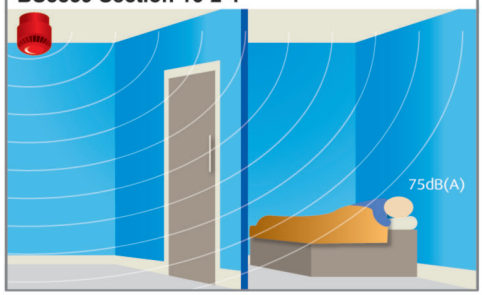
The minimum sound level should be 65dB(A) or 5dB(A) above a background noise which is louder than 60dB(A) (if lasting more than 30 seconds) and at a frequency of between 500Hz and 1000Hz. The maximum sound level should not be greater than 120dB(A) at any normally accessible point. May be reduced to 60dB(A) in stairways, enclosures up to 60m² and specific points of limited extent.

BS5839 Section 16-2-1



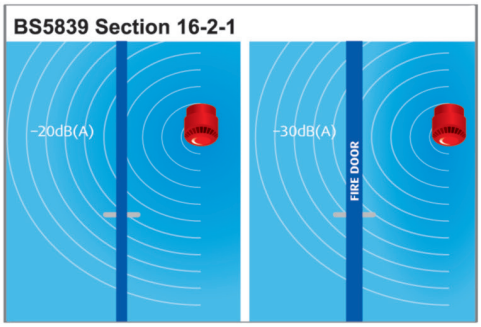
Sounder device cabling should be arranged so that in the event of a fault at least one sounder will remain operational during a fire condition.

BS5839 Section 16-2-1



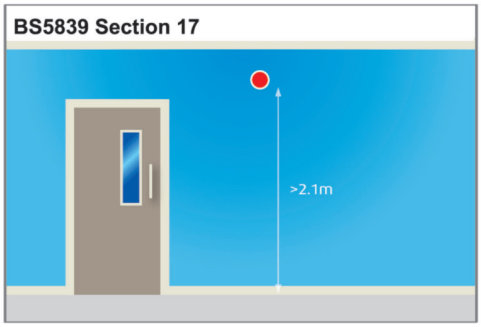
For areas where people are sleeping, sounder devices should produce a minimum 75dB(A) at the bed-head with all doors shut. In buildings providing sleeping accomodation for a significant number of people, all bedrooms should have both audible and visual alarms.

BS5839 Section 16-2-1



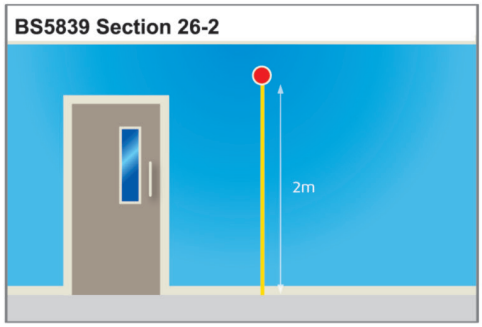
Decibel loss occurs through doors: approximately -20dB(A) through a normal door, and approximately -30dB(A) through a fire door. **Unless a sounder is installed in a bedroom, it is unlikely that 75dB(A) will be achieved.**

BS5839 Section 17



Visual alarms such as beacons should always be mounted at a minimum height of 2.1 from floor level.

BS5839 Section 26-2



Unless MICC cable is used, all cabling should be mechanically protected from floor level up to a height of 2m. In relatively benign areas, such as shops, offices and similar, cabling can be clipped to robust walls etc.