



**HOCHIKI**

*a guide to*

**BS5839**

*Part 1 : 2002*

*(incorporating Amendment Nos. 1 & 2)*

Welcome to  
**“A Guide to BS5839 Part 1 : 2002”**  
from  
**HOCHIKI EUROPE (UK) LTD**

This booklet is designed to provide essential information on key points from the newest edition of the BS5839 Part 1 specifically identified as being important for the installer of fire detection products. It should **never** be utilised as any form of substitute for the standard itself.

**Remember, the correct positioning of devices\* and call points is essential to avoid unwanted alarm activations.**

Further detailed information can be acquired from the standard, contact BSI directly for your copy, or visit their web site:

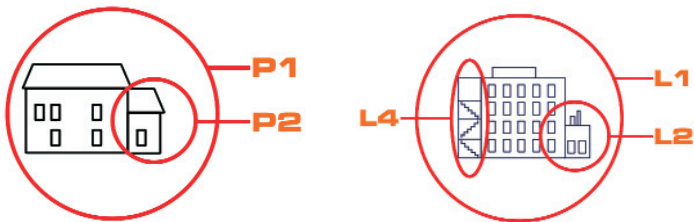


Alternatively contact our Customer Support Department who will be pleased to help clarify any questions regarding the new standard:

**+44 (0)1634 260133**  
**psupport@hochikieurope.com**

*\* Note: The word “device” has been used throughout to represent both analogue sensors and conventional (non-addressable) detectors.*

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



**P** = AFD\* designed to primarily protect Property

**P1** = AFD installed throughout all areas

**P2** = AFD installed only in defined areas

**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 those routes

**L4** = AFD installed in escape routes comprising circulation areas and spaces such as corridors and stairways

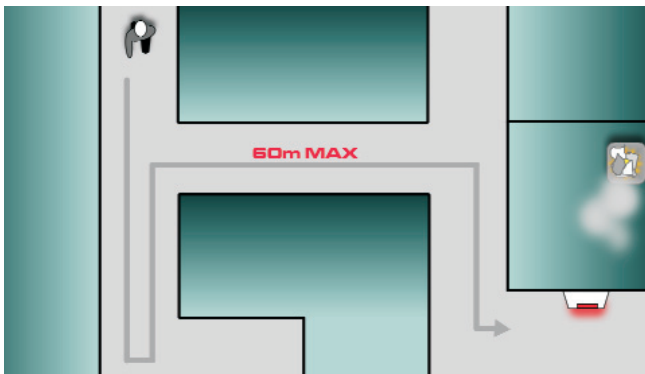
**L5** = A non-prescriptive system in which the protected area(s) is designed to satisfy a specific fire risk objective (other than that of L1 to L4)

**M** = System designed to be operated manually (no AFD)

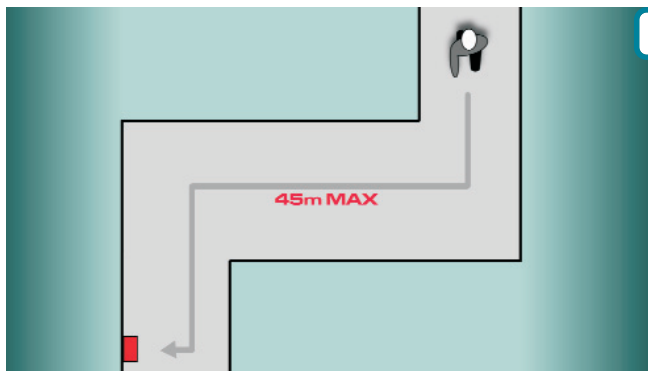
(\*AFD = Automatic Fire Detection)



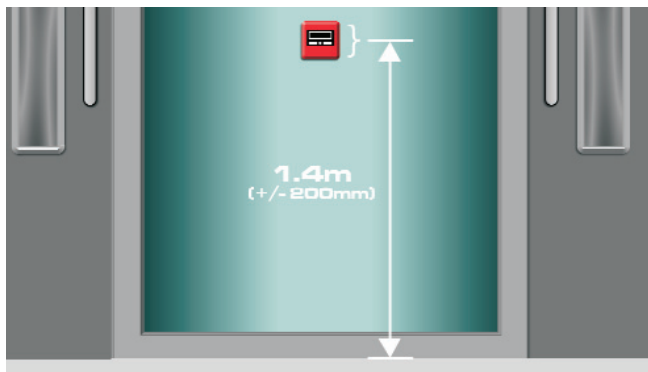
The minimum sound level of a sounder device should be **65dB(A)** OR 5dB(A) above a background noise (if lasting more than 30 seconds) and at a frequency of between **500Hz** and **1000Hz**. This can be reduced to **60dB(A)** in stairwells or enclosures **<60m<sup>2</sup>**.



A person searching a Zone for a fire should not have to travel more than **60m** to identify the source of a fire.

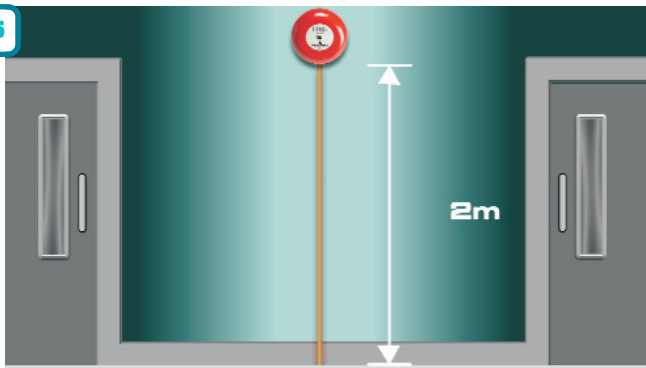


A person should not have to travel more than **45m** along an escape route to reach a Manual Call Point.

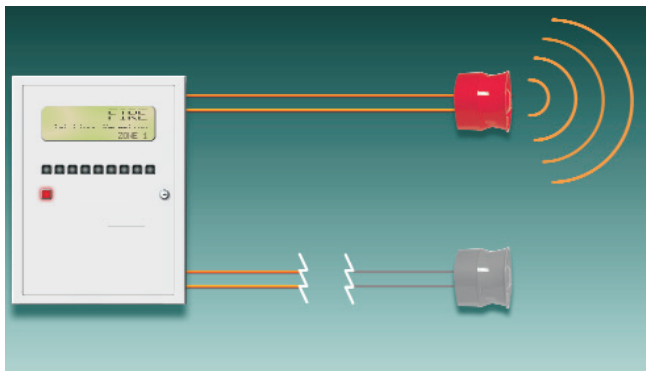


Manual Callpoints should be positioned **1.4m (+/- 200mm)** from floor level. Any non-mechanically protected cable medium should have additional protection up to a height of **2m** from floor level.

5

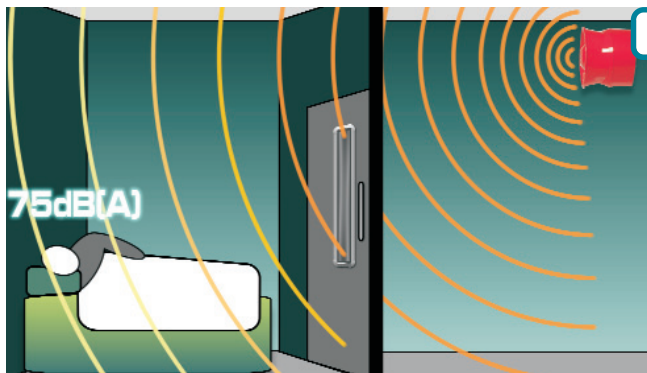


Unless MICC cable is used all cabling should be mechanically protected from floor level up to a height of **2m**.

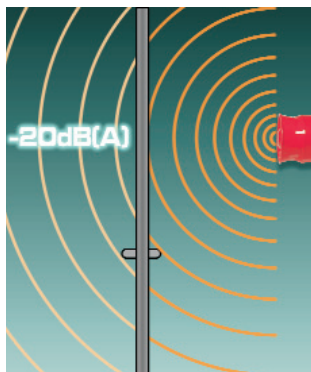


Sounder device cabling should be arranged so that in the event of a fault during a fire condition, at least one sounder will remain operational.

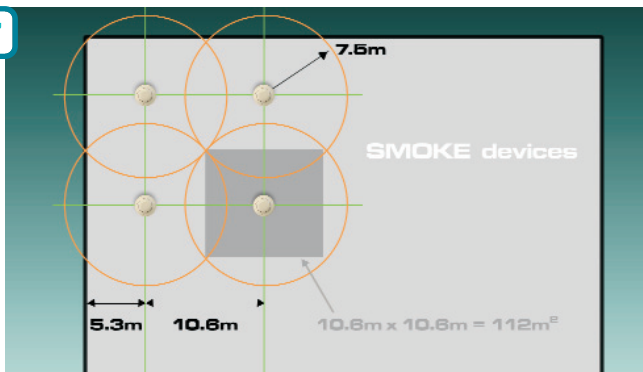
All metallic parts of a system including conduit and cabling should be well separated from any installed lightning protection system.



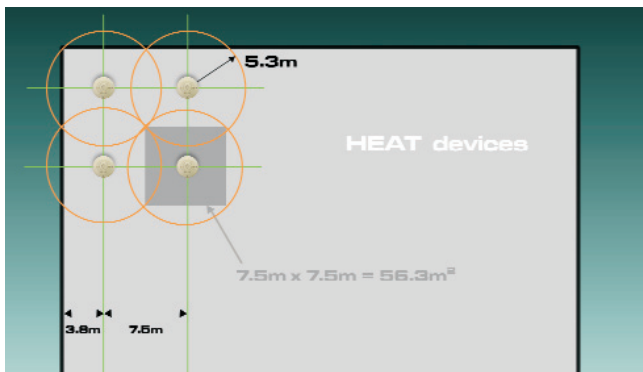
For areas where people are sleeping, sounder devices should produce a minimum of **75dB(A)** at the bed-head with all doors shut.



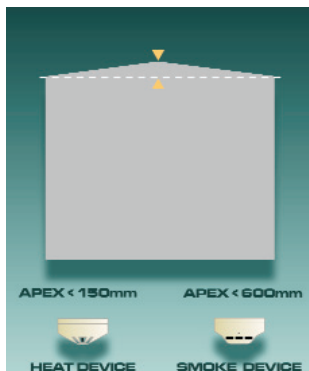
Decibel loss occurs through doors: approximately **-20dB(A)** through a normal door, and approximately **-30dB(A)** through a fire door.



Smoke detection devices have an individual coverage of **7.5m** radius. However these radii must overlap to ensure there are no "blind spots". Therefore the individual coverage can be represented by a square measuring **10.6m x 10.6m** giving an actual area coverage of **112m<sup>2</sup>** per device.



Heat detection devices have an individual coverage of **5.3m** radius. However these radii must overlap to ensure there are no "blind spots". Therefore the individual coverage can be represented by a square measuring **7.5m x 7.5m** giving an actual area coverage of **56.3m<sup>2</sup>** per device.

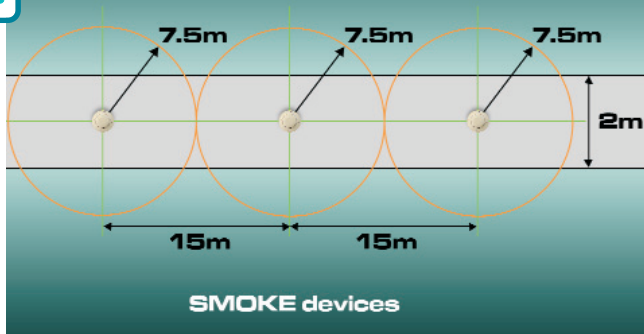


For ceilings that feature an apex: as long as the height of the apex from the rest of the ceiling is less than **150mm** for Heat detectors or less than **600mm** for Smoke detectors then these can be treated the same as flat ceilings.

For higher apexes, a device should be installed at the highest point. The distance to adjacent devices can be increased by 1% per 1 degree of angle of the roof.

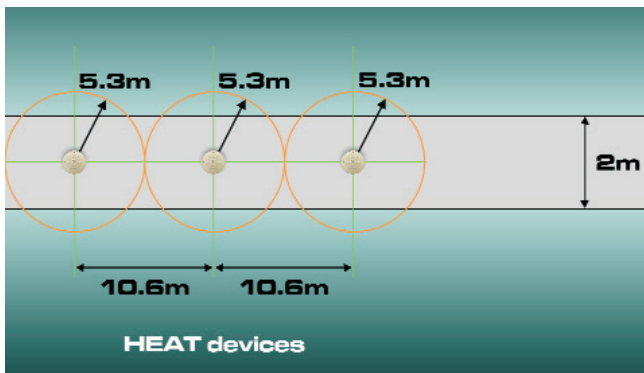
Detector Type	Ceiling Heights (m)	
	General Limits	P Systems & Rapid Attendance
Heat detectors BS EN 54-5 Part 5	Class A1	13.5
	Other Classes	12.0
Point smoke detectors	10.5	15.0
Carbon monoxide detectors	10.5	15.0
Aspirating Smoke Detection Systems (Category 1)	Normal	15.0
	Enhanced	17.0
	Very High	21.0
Optical beam smoke detectors BS EN54 Part 12	25.0	40.0

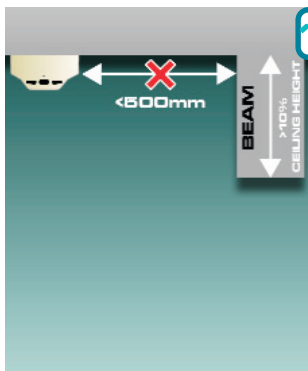
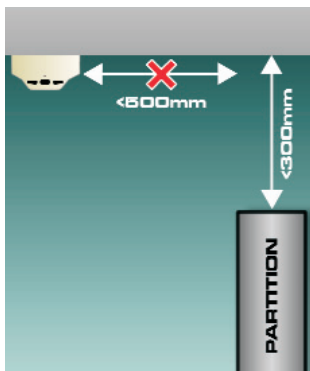
Limits of Ceiling Heights.



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.

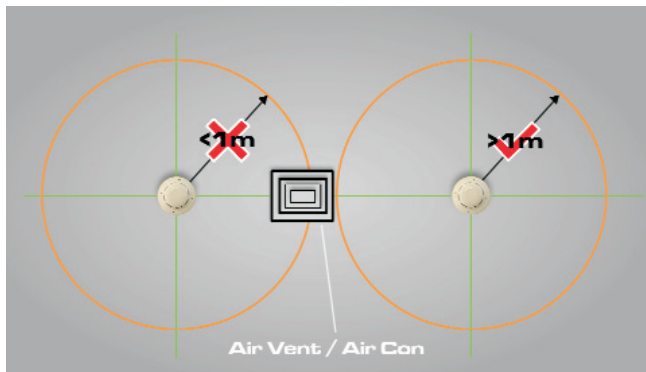
Any corridor over **2m** wide is deemed a room and device spacing should follow the standard for rooms (see page 7).





A device should not be mounted within **500mm** of any obstruction.

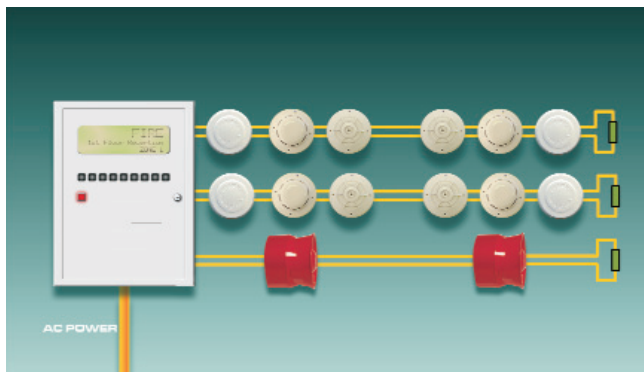
If the top of a solid partition is less than **300mm** from ceiling then treat it as a wall. Similarly, ceiling obstructions such as beams should be treated as walls if deeper than **10%** of the ceiling height.



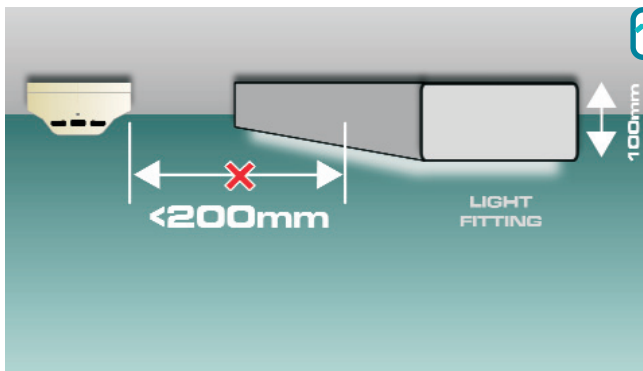
Don't site detectors less than **1m** from air inlets or air-conditioning units.



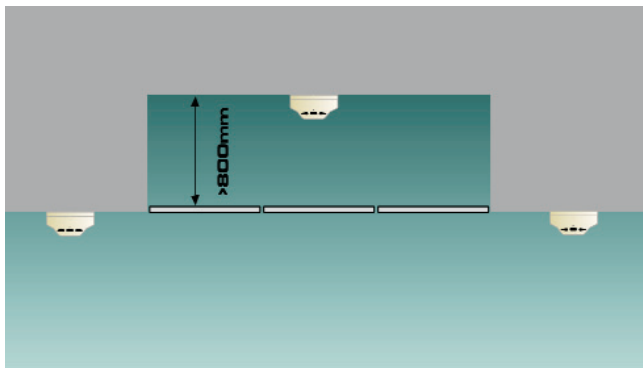
Short circuit isolators should be installed to limit an effect of one fault to **2000m<sup>2</sup>**. One analogue loop should be no more than **10,000m<sup>2</sup>**.



Fire resistant cabling is now required within the whole fire alarm system including the mains supply cables. The use of non-fire resisting cables, whether mechanically protected by fire-resisting construction or not, will no longer comply with BS5839.

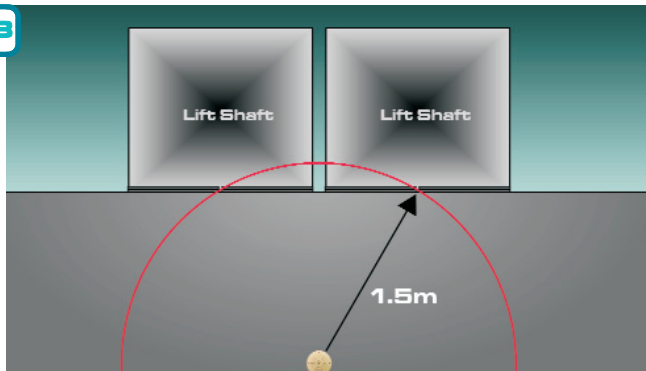


Never mount devices closer than twice the depth of light fittings.

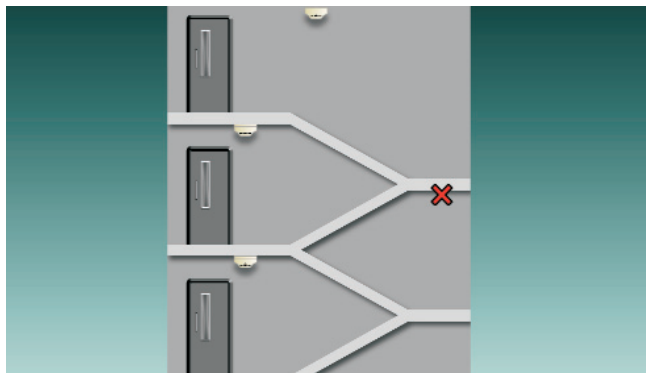


Voids less than **800mm** in height need not have independent coverage, unless fire or smoke is able to spread from one area to another through the void or risk assessment shows AFD (Automatic Fire Detection) to be necessary.

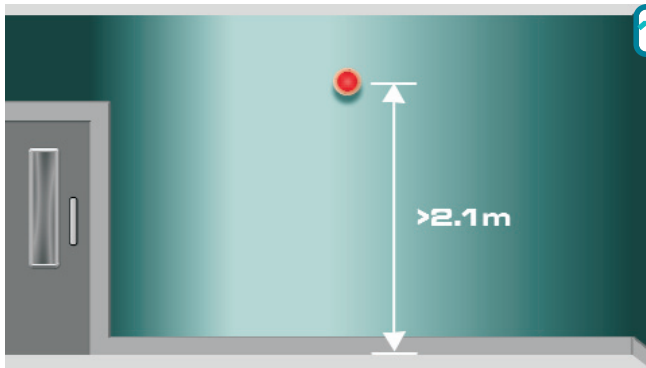
13



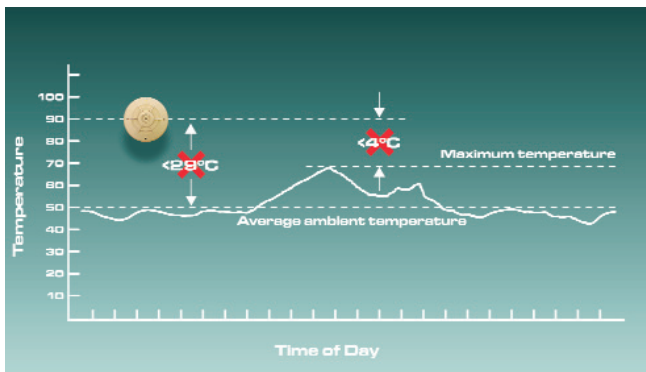
Vertical shafts like lifts and stairways should have a device mounted within **1.5m** of any opening.



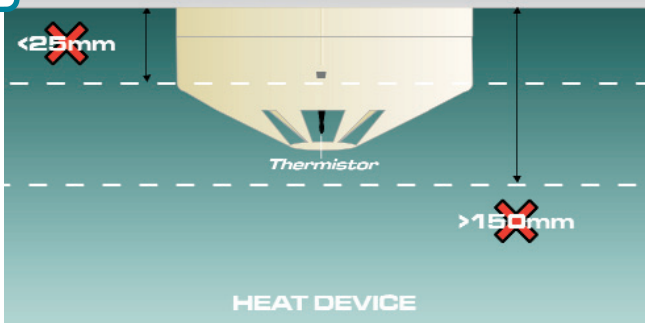
Enclosed stairways should have a detector on each main landing.



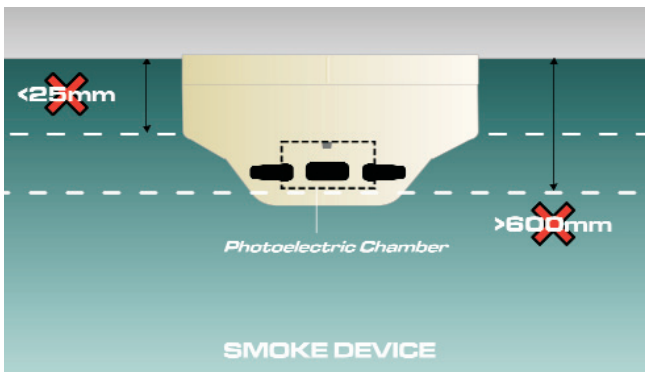
Visual alarms such as strobes, beacons or remote indicators should always be mounted above **2.1 m** from floor level, whether wall or ceiling mounted.



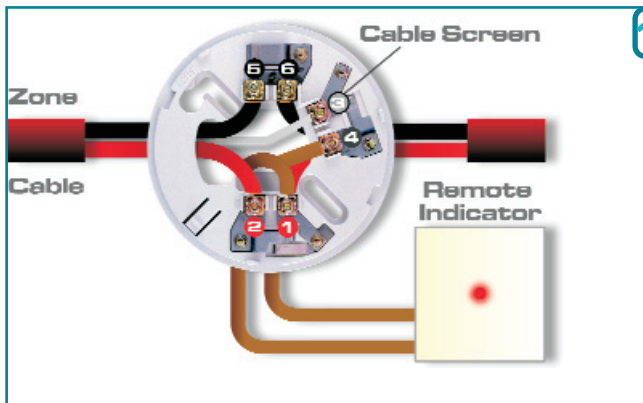
The minimum static response of heat devices should not be less than **29°C** above the average ambient temperature, or less than **4°C** above the highest temperature the device can be expected to experience.



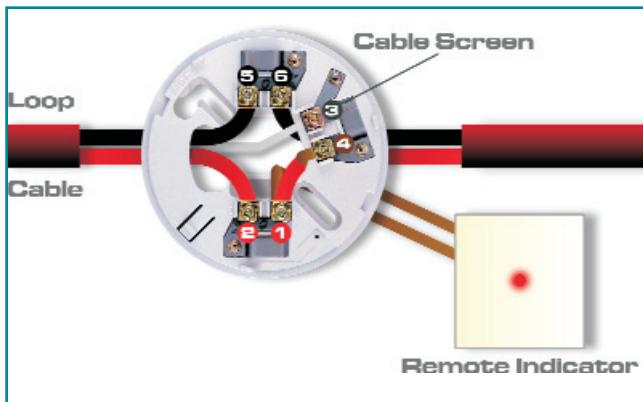
The sensing element of a Heat detection device (thermistor) should not be less than **25mm** below ceiling, and not greater than **150mm** below ceiling.



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



The **YBN-R/6** standard **conventional** base from the Hochiki range should be wired as shown above.



The **YBN-R/3** standard **analogue** base from the Hochiki range should be wired as shown above.



Photoelectric smoke devices feature a removable smoke chamber which can be easily cleaned to help maintain optimum performance of the device. Hochiki Europe recommends that this should be carried out at least once per year.

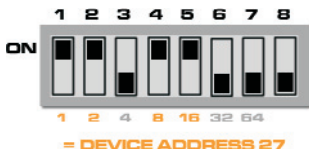


A battery-powered, analogue device programming unit is available. The Hochiki TCH-B100 hand held programmer is light, robust, easy to operate and is used for both address programming and functional testing.

Input/Output Modules are generally addressed by the use of simple DIL switches. The following table shows how each address is programmed using a combination of seven DIL switches representing binary values.

Switch	1	2	3	4	5	6	7	Addr	Switch	1	2	3	4	5	6	7	Addr	Switch	1	2	3	4	5	6	7	Addr
●	○	○	○	○	○	○	○	1	●	○	○	○	○	○	○	○	43	●	○	○	○	○	○	○	○	85
○	●	○	○	○	○	○	○	2	○	○	○	○	○	○	○	○	44	○	○	○	○	○	○	○	○	86
●	○	○	○	○	○	○	○	3	●	○	○	○	○	○	○	○	45	●	○	○	○	○	○	○	○	87
○	○	○	○	○	○	○	○	4	○	○	○	○	○	○	○	○	46	○	○	○	○	○	○	○	○	88
●	○	○	○	○	○	○	○	5	●	○	○	○	○	○	○	○	47	●	○	○	○	○	○	○	○	89
○	○	○	○	○	○	○	○	6	○	○	○	○	○	○	○	○	48	○	○	○	○	○	○	○	○	90
●	○	○	○	○	○	○	○	7	●	○	○	○	○	○	○	○	49	●	○	○	○	○	○	○	○	91
○	○	○	○	○	○	○	○	8	○	○	○	○	○	○	○	○	50	○	○	○	○	○	○	○	○	92
○	○	○	○	○	○	○	○	9	●	○	○	○	○	○	○	○	51	●	○	○	○	○	○	○	○	93
○	○	○	○	○	○	○	○	10	○	○	○	○	○	○	○	○	52	○	○	○	○	○	○	○	○	94
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●	○	○	○	○	○	○	○		●	○	○	○	○	○	○			●	○	○	○	○	○	○	○	127

● = ON ○ = OFF



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since 1918**

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