

BS5839: Part 1: 2002 TESTING AND MAINTENANCE

WEEKLY TESTING BY THE USER

Ensure that all indicators show by resetting according to the instructions provided with the panel and check that the internal sounder operates. Operate a manual call point to test the system. Check that the sounders operate. Reset the fire alarm panel. Each week choose a different manual call point so that all the manual call points in the building are tested in rotation over a prolonged period. Check all call points and detectors and ensure that none are obstructed in any way. Enter results of tests into the log book.

PERIODIC INSPECTION AND TEST OF THE SYSTEM

This consists of multiple checks and tests made by a competent person with the aim of ensuring the fire alarm system remains functional, is in good working order and is still compliant with the code.

ANNUAL TEST

As per above. Additionally test all detectors and call points and check for correct operation.

EVERY 2 - 3 YEARS

Clean smoke detectors to ensure correct operation and freedom from false alarms. Special equipment is required for cleaning smoke detectors.

EVERY 4 YEARS

Replace sealed lead acid batteries. If the operating temperature exceeds 25°C continuously, then the battery may need to be replaced sooner.

BS5839 Requirements-

Most commercial and industrial premises require a fire detection system to protect life and property. National and local legislation cover a variety of buildings and their safety requirements, therefore it is always advisable to consult the local Fire Prevention Officer about specific premises. The following guide is intended as a reference only, and BS 5839 Part 1 2002 should be consulted for all fire system design requirements.

SYSTEM GUIDELINES - BS5839 Part 1 : 1988 (2003 major changes to be updated soon)

System Classifications

Type P systems are automatically activated fire detection systems designed to protect property.

These systems are then sub-divided into:

Type P1 Fire system installed throughout building.

Type P2 Fire system only installed in a defined part of the building.

Type L systems are automatically activated fire detection systems designed to protect life. These systems are then sub-divided into:

Type L1 Fire system installed throughout building.

Type L2 Fire system only installed in a defined part of the building.

Type L3 Fire system only installed for the protection of escape routes.

Type M systems encompass all manually activated fire systems.

System Zoning

To quickly and accurately identify the fire source, the building should be divided into zones. Each zone should be accessible from the main circulation routes leading from the location of the control panel. If the total floor area of the building does not exceed 300m', it need only have one zone, no matter how many floors it has. Otherwise, each floor should be treated as an individual zone. The total floor area for anyone zone should not exceed 2000m'.

A searcher should not have to travel more than 30m into a zone for visual indication of the fire's position. The use of remote indicators outside doors may allow a zone area to be increased.

A fire compartment is an area bordered by a fire resisting structure with a resistance of at least 30 minutes. If a stairwell or a similar structure extended beyond one floor but was in one fire compartment, the stairwell should be a separate zone. If the zone covered more than one fire compartment, the zone boundaries should follow the compartment boundaries.

If a building were split into several occupancies, no zone should ever be split between two occupancies.

If a detector were removed from the zone circuit this must not isolate a break glass call point on the same circuit.

Control Panels

The type of control panel will depend upon the size of the building and the extent of the automatic protection provided. The panel is chosen according to the number of zone and sounder circuits, ancillary control relays, battery standby time and any other individual customer requirements.

The central control panel must be positioned in a low fire risk area that provides the Fire Brigade with easy access in cases of emergency. The area must be well lit, therefore provision of emergency lighting may be necessary. A plan of the building and the zone locations must be kept beside the control panel.

Detectors

Choose the correct detector type. With more and more flame retardant treatments used in building materials and furniture, photoelectric (optical) smoke detectors tend to be the most popular choice.

Optical smoke detectors are best suited to the detection of slow burning, smouldering fires caused by materials such as plastic, PVC or foam. Optical detectors react best to the large smoke particles produced by such fires and help to avoid false alarms from cooking fumes etc. Ionisation detectors are the preferred choice for the detection of the small smoke particles produced by flaming or fast burning fires, e.g. fires involving liquid fuels. They may be quicker to respond in the room of the fire's origin. Heat detectors (fixed heat or rate of rise heat) will provide adequate protection in areas unsuitable for smoke detectors.

Always ensure detectors are evenly spaced and allow for any obstructions, such as beams and partitions. Always consider the environmental conditions - there is a higher risk of false alarms if smoke detectors are placed in areas of high air movement, or where steam, vapour or exhaust fumes are likely to be present.

Smoke and heat detectors are placed at the highest points of the enclosed areas, as this is where smoke and heat from fires is most concentrated.

The heat sensitive element of a heat detector should be sited between 25mm and 150mm below the ceiling or roof. The smoke detector's sensor element should be sited between 25mm and 600mm below the ceiling or roof. If the area has a pitched or north light roof, smoke detectors should be installed in each apex.

Under flat horizontal ceilings and corridors more than 5m wide, the maximum horizontal distance between any point in the area and the nearest detector should be 5.3m for point Heat Detectors, covering a maximum area of 50m² and 7.5m for point Smoke Detectors, to cover a maximum area of 100m².

Manual Call Points

The break glass call point allows personnel to raise the alarm in the event of a fire. Manual call points should be located on exit routes, including exits to the open air, and on stairwell landings. They should be mounted 1.4 metres above the floor in easily accessible, conspicuous positions. Building occupants should not have to travel more than 30 metres within a building to reach a manual call point. This maximum distance may need to be reduced if the occupants are elderly or infirm.

In general, all call points within a building should be of the same type and operation. Exceptions to this rule would include weatherproof call points or those designed for use in hazardous areas.

If a call point is to be used on a 240V AC supply the provision of earth continuity between external circuits is required in order to comply with paragraph 4.1.7 of BS 5839, Part 2.

Sounders

Alarm sounders are used to alert and evacuate occupants. They are normally bells or electronic sounders and all audible warning devices in the same system must have a similar sound. This distinguishes them from other audible alarms.

The sound should not permanently damage hearing but it should be a minimum of 65dBA or 5dBA above any background noise likely to exceed 30 seconds. Should excessive noise be present, a visual indication of the alarm condition should also be provided. If the alarm is to wake sleeping occupants, such as in a hotel, the sound level should be a minimum of 75dBA at the bed-head. Sound level frequencies should normally be kept within the range of 500 to 1,000Hz

No matter how small the system, a minimum of two sounders are required and the correct sound levels must be maintained in all parts of the building.

The sound level is reduced by approximately 20dBA by a door and by approximately 30dBA by a fire door.

Multiple small sounders produce a better sound distribution than a few large ones. In some areas, a large number of quieter sounders may be preferable to a few very loud sounders to prevent noise levels becoming too loud. Due to individual site characteristics, sound level checks should be carried out to ensure minimum sound levels are obtained.

Stand-By Power Supplies

Automatically charged batteries often supply standby power. Automotive type batteries must not be used. The supply must be able to operate the alarm for 30 minutes after a certain minimum duration. The minimum duration varies with type of system and occupancy.

For property protection, if the mains failure is immediately recognised, a standby duration of 24 hours is required, if not the required duration is 24 hours longer than the building may remain unoccupied, For life protection, a standby duration of 24 hours after the fault is detected is required.

Cables and Interconnections

All permissible fire system cables are described in BS5839, Part 1. Fireproof cables are preferred for fire alarm installations. However, as a minimum they must be utilised for any circuits that are required to operate after detection of a fire e.g. sounder circuits, power supplies and signalling interconnections. Fireproof cables require fireproof supporting clips.

Detection circuits may be wired in pvc e.g. twin and earth in line with guidelines provided in BS5839, Part 1.

Conductors carrying fire alarm power or signals should be segregated from conductors used for other systems.

Where possible all cable joints should be made within one of the system components. If a joint is unavoidable then it should be enclosed in a suitable reserved junction box labelled "Fire Alarm", Joints and terminations should only be carried out by competent persons.

Connections to the mains should be via an isolating protective device e.g. an isolating switch fuse, the cover of the device should be red and should be labelled "Fire Alarm: Do Not Switch Off",

Cables other than M.I.C.C. should be provided with mechanical protection when necessary i.e. if physical damage or rodent attack is likely, or if they are less than 2.25 metres above the floor. Mechanical protection may be provided by conduit, trunking or by laying in cable tray.

Certification and Testing

A commissioning certificate, log book and system diagram are required to be given to the system user upon the completion of an installation. After installation, every system should be regularly tested and serviced. BS5839, Part 1 recommends the following:

Daily (User) - Keep a daily record of faults and report them.

Weekly (User) - Activate a different call point or detector to check the system, log the details and report any faults.

Quarterly - Check the log book, operate a call point, simulate faults to check the control panel, visually check for any structural alterations, and log all details.

Annually - Carry out normal quarterly testing and also test every detector in situ and ensure all cable fittings are secure.

BS5839 Part 6

The purpose of this simple guide is to assist specifiers and installers in complying with the recommendations of BS 5839 Part 6 when installing smoke alarms in dwellings and while every reasonable endeavor has been made to ensure the accuracy of the information, it is the responsibility of the reader to ensure that they satisfy the recommendations of the British Standard in any particular case. No liability is accepted for the consequences of any errors or omissions in this guide. The guide is not intended to be a substitute for the British Standard, the contents of which should be carefully studied by contractors installing smoke alarms in dwellings. There are a lot of similarities between the latter part 6 of BS 5839 1995 and the earlier BS 5839 Part 1 for commercial properties but in essence part 1 demands a fully monitored centrally controlled system with alert devices throughout the premises achieving at least 65 Db(A) with the following levels most commonly implicated but there are others.

Scope

BS 5839 part 6 covers all residential dwellings, both new and old. This part applies to bungalows, multi storey houses, individual flats and maisonettes, mobile homes, sheltered houses, NHS housing in the community for mentally handicapped or mentally ill people, mansions and houses divided into several self contained family dwelling units. It does not apply to hostels, caravans or boats (other than permanently moored boats used solely as residential premises), or to the communal parts of purpose built sheltered housing and blocks of flats or maisonettes. Compliance with the standard does not of itself confer immunity from legal obligations.

The Products

The British Standard recommends that all smoke alarms should conform to BS 5446 : Part 1. It also recommends that they should have been type tested, and preferably have been approved under a recognised approval scheme. All TTS smoke alarms fully meet the requirements of BS 5446 : Part 1 and have BSI kitemark and CE approval. This facilitates incorporation of a domestic heat detector, which can be used to trigger a nearby smoke alarm to which it is wired. Heat detectors are very much slower in their response to fire than smoke detectors. They should only be used as supplementary protection to smoke alarms, in rooms, such as kitchens, where constant false alarms would occur if smoke alarms were installed (or, less commonly, in rooms in which a fire would not cause an early threat to escape routes). In particular, heat detectors should never be installed in circulation spaces that form escape routes from the house; smoke alarms must be used in these areas.

Applications

It should first be ensured that standard smoke alarms are a suitable form of fire detection. Smoke alarms are suitable for most flats, maisonettes and single or two storey houses (including houses in multiple occupation) unless they are:

- (i) very large (more than 200 m² on any floor);
- or (ii) unusually high (with the upper floor more than 4.5m above ground level).

Larger properties need a form of fire detection and alarm system with a central control panel. The system then becomes BS 5839 Part 1 design. However, in a house in multiple occupation, regardless of size, smoke alarms may be used to give warning to occupants of a fire in their own accommodation, while communal escape routes are protected by a full fire detection and alarm system.

For new dwellings, battery operated smoke alarms should not be used. These should only be used for retrofitting in existing bungalows, flats and owner occupied two storey houses in which there is adequate means of escape in the event of fire. Mains operated smoke alarms should be used for all new dwellings and for retrofitting in rented maisonettes and two storey houses. (They should also be used for single storey bungalows and flats if, for example, occupants could be trapped in a lounge, dining room or bedroom, due to a fire in another room through which it is necessary to pass in order

to escape from the property; this might occur if, for example, there is a bedroom off a lounge, and there is no window in the bedroom suitable for escape.) Mains operated smoke alarms should also be used in preference to battery operated devices if the occupants are considered to be at high risk from fire or if they may not be able to replace batteries soon after a low battery fault warning is given.

Both the ionisation chamber and optical smoke alarms have a wide application range, and either type will be effective in giving a sufficiently early warning of fire in many circumstances. However, the optical smoke alarm responds better to some types of fire than the ionisation chamber type, whereas other fires are more readily detected by the ionisation chamber smoke alarm. Avoidance of false alarms may also dictate the use of one type of smoke alarm in a particular location, rather than the other. The most common cause of false alarms is fumes generated by cooking. Optical smoke alarms are generally less sensitive to, for example, smoldering toast than ionisation chamber smoke alarms (although the optical smoke alarm will respond if the toast catches fire). Because of this, BS 5839 : Part 6 recommends that the smoke alarm nearest to a kitchen should be of the optical type. For effective fire detection, the British Standard also recommends that optical smoke alarms should be used in the circulation areas of the house.

Accordingly, to comply with the British Standard, optical smoke alarms should be used in the hallways and staircases. This should be particularly noted if compliance with the British Standard is a requirement of a building control authority.

In other locations, smoke alarm choice should depend mainly on the type of fire that may be expected. In many cases, this will be something of an unknown, and, often, either type of detector can be used. Under these circumstances, avoidance of false alarms should be taken into account. In some dwellings, electricity supplies may be disconnected because the occupiers are unable to pay for supplies. Disconnection may be at a coin or card operated meter or may be due to deliberate disconnection by the supplier. If this is likely to occur, smoke alarms with battery back-up should be installed. In practice, in many cases, there will be insufficient information regarding the occupiers, who may, in any case change. Accordingly, TTS recommend the use of smoke alarms with battery back-up in most circumstances, as is now quite common practice.

Connection to Mains Supply

Warning: Installation of mains powered smoke alarms should be undertaken only by a qualified electrician. Installation should be undertaken in accordance with BS 5839 : Part 6 and BS 7671 (IEE Wiring Regulations). Mains-only smoke alarms with no battery back-up should be connected on a single independent, dedicated circuit at the dwelling's distribution board. No other electrical equipment should be connected to this circuit. The circuit should preferably not be protected by any r.c.d., whether dedicated to the circuit or common to all circuits derived from the distribution board. If, however, r.c.d. protection is essential for electrical safety, the British Standard recommends two options:

(i) The r.c.d. should be dedicated to the smoke alarm circuit (which should then not be served by any other r.c.d.);

or

(ii) The r.c.d. protection should be arranged so that the r.c.d. serving the smoke alarm circuit operates independently of any r.c.d. protection for circuits supplying socket outlets or portable equipment. (For example, this could be satisfied by a distribution board with a time delayed 100mA r.c.d. serving the entire board, and 30mA r.c.d. protection on socket outlets, etc. It would be expected that, in the event of earth leakage on a socket outlet circuit, the 30mA r.c.d. would operate without the 100mA r.c.d. necessarily operating.)

BS 5839 : Part 6 recommends that there be a method of silencing or disabling smoke alarms in the event of a prolonged false alarm, perhaps due to a fault or a build up of pollution in the detector chamber. However, to comply with BS 5839 Part 6, there must be a means of silencing or disablement. This recommendation can be satisfied if the dedicated circuit serving the smoke alarms is protected by a miniature circuit breaker (as opposed to a fuse); the British Standard recognizes a miniature circuit breaker as a

suitable and readily accessible means of silencing.

Because of the back-up batteries, these smoke alarms can be connected to either:

(i) a single dedicated circuit at the distribution board.

or

(ii) a separately electrically protected, regularly used local lighting circuit. However, if the smoke alarms are connected to a lighting circuit, isolation of the detector for maintenance may be less convenient due to the need to isolate the lighting circuit.

For models with battery back-up, the British Standard does not specifically recommend against r.c.d. protection of the relevant circuit. However, TTS would still advise that it be ensured that the circuit used is not subject to nuisance tripping due to r.c.d. protection.

Interconnection of Smoke Alarms

If two or more smoke alarms are installed, they should normally be interconnected to maximise the extent of the audible warning when one detects a fire. In new dwellings, smoke alarms should always be interconnected. It is essential that interconnected smoke alarms are all supplied from a single common circuit.

Wiring

All wiring should be installed in accordance with BS 7671 (IEE Wiring Regulations). The wiring of smoke alarms need not be fire resisting. The mains supplies, and any interconnections between smoke alarms, may be wired in any suitably rated cable designed for a.c. mains installations. However, care should be taken to ensure that the mains supply cable, and the cable used for interconnection of smoke alarms, is not exposed to damage. BS 5839 : Part 6 recommends that the cables are protected, by for example capping under plaster, conduit, or trunking, in any areas where they may be subject to impact, abrasion or rodent attack.

Where cables pass through walls, a smooth clearance hole should be provided. If additional mechanical protection is necessary, a smooth-bore sleeve should be sealed into the wall. Care should be taken to ensure that the ends of the sleeve are free from sharp edges. Cable penetrations should be filled and should maintain the fire resistance of any fire resisting walls or floors. Joints in cables should be avoided but, where unavoidable, should be enclosed in a suitable and accessible junction box. Reliable termination methods should be adopted.

Grades of System

BS 5839 : Part 6 defines various 'Grades' of system. These will be used by enforcing authorities and specifiers to specify the type of fire detection equipment that is to be installed. Smoke alarms can be used in Grade C*, D, E and F systems, which are suitable for protection of most normal flats, maisonettes and houses.

Grade F systems comprise one or more battery-powered smoke alarms.

Grade E systems comprise one or more mains-powered smoke alarms.

Grade D systems comprise one or more mains-powered smoke alarms, each with an integral standby supply, such as a battery.

The grades are intentionally defined in such a way that higher grades are always of a better standard than lower grades. So, if a specification calls for a Grade F system, this can always be satisfied by installing mains powered smoke alarms. Similarly, if a specification calls for a Grade E system, the requirement can be satisfied by installing mains-powered smoke alarms either with or without battery back-up.

Grade C systems comprise one or more smoke detectors / alarms with a central control panel, however, Grade C systems may also comprise 12V smoke detectors integrated with an intruder alarm system, subject to the integrated system complying with BS 5839: Part 6. Grade A and B systems are not considered in this Guide. Smoke alarms cannot be used to satisfy the recommendations of the British Standard for Grade A or B systems; these systems use complete fire detection and alarm systems with separate

detectors, sounders and control equipment. TTS Fire & Security Ltd. has a comprehensive range of radio fire detection products for Grade A and B systems. TTS should be consulted for guidance on the design of these systems, which require to be more 'tailor made' for the particular premises.

Although BS 5839 : Part 6 recommends type LD3 protection as the minimum standard of protection for those single-family dwellings in which smoke alarms are suitable, it should be stressed that the Standard recommends the installation of additional smoke alarms (so providing LD2, or in some cases even LD1, protection) if: The risk to occupants is higher than in a 'typical' dwelling. Possible examples could be the need for smoke alarms to be installed in living rooms and dining rooms if the occupiers smoke, or in bedrooms if they smoke in bed. It might also be appropriate to install smoke alarms in rooms, particularly bedrooms, in which portable heaters or solid-fuel fires are used during the night, or in which electric blankets are used, particularly by high-risk groups such as the elderly. Houses in which the principal occupant is elderly or in which there are several elderly occupants or young children may warrant additional smoke alarms. If occupants' mobility is impaired, additional smoke alarms may also provide greater time for them to escape in the event of fire. The means of escape from the dwelling suffers from some shortcoming. A particular example would be a lounge, dining room or bedroom with no suitable window for escape, located off another room e.g. a bedroom off a lounge. A fire in the lounge could trap people in the bedroom, and a smoke alarm should be provided in the lounge to give early warning of fire.

Where any doubt exists as to the need for, or appropriate locations of, additional smoke alarms, the advice of the fire brigade or other fire safety specialists should be sought. Advice can also be provided by the TTS Fire & Security Ltd.

Locating and Siting Smoke Alarms

Smoke alarms should be sited in accordance with the following guidance to ensure both adequate detection and alarm sounder audibility:

- At least one smoke alarm should be located between the sleeping areas and the most likely sources of fire (living room and kitchen).

- In a single storey dwelling, one smoke alarm may be sufficient, in which case it should be sited as close as possible to the living accommodation. If there are rooms (other than toilets, bathrooms or shower rooms) on either side of a bedroom, a smoke alarm should be sited in the hallway, mid-way between these rooms.

- In a two storey house, at least one smoke alarm should be located on each storey. In a conventional two storey house, one smoke alarm should be sited on the ground floor between the staircase and any room in which fire might start. A further smoke alarm should be sited on the upstairs landing.

- Additional smoke alarms should be provided in long hallways of all dwellings. Within such circulation areas, no door to any room should be further than 7.5 m from the nearest smoke detector. In open-plan accommodation, where a stair may be open to a living/dining area, the living/dining area should be treated as a circulation area.

- Under flat ceilings, the distance from any point in the room or area that is to be protected to the nearest smoke alarm should never be more than 7.5 m. (or 5.3 m in the case of a heat detector). Smoke alarms should preferably be mounted on ceilings, unless the ceiling temperature is likely to be significantly greater than the general air temperature. If ceiling mounting is not possible, wall mounting may be considered in small rooms or short hallways. However, smoke alarms should not be mounted on poorly insulated external walls.

If smoke alarms are mounted on walls in small rooms or short hallways, they should be mounted so that:

the smoke entry grille is between 150 mm and 300 mm below the ceiling; and the smoke entry grille is above the top of any doorway. Smoke alarms should not be mounted adjacent to, or directly above, heaters or air-conditioning vents. Smoke alarms should be sited in positions that are reasonably accessible, particularly in the case of models containing batteries, so that the False Alarm Control ('hush button') can be

operated and that the smoke alarm may be de-mounted to change batteries. Smoke alarms should not be located closer than 300 mm to walls or light fittings. In order that the smoke alarms will wake people from sleep, there is a need to ensure that there is a smoke alarm within 3 m of each bedroom door.

NOTE:

The above guidance will ensure only protection of circulation spaces (a type LD3 system). Such protection cannot be depended upon to save the life of anyone in the room in which fire starts. In many circumstances, the risk of fire may justify a type LD2 or LD1 system. This will necessitate detectors (whether heat or smoke) in some rooms of the dwelling. In houses of multiple occupancy a manual call point should be installed by exit doors and on each floor level.

False Alarms

Occasional false alarms from smoke alarms are inevitable, but installers should site smoke alarms in such a way as to avoid unnecessary false alarms. However, avoidance of false alarms should never take precedence over effective fire detection. Guidance on selection of the most suitable type of smoke alarm in order to provide optimum fire detection while avoiding unnecessary false alarms. Note that the smoke alarm nearest to any kitchen should be of the optical type. This will normally be the case, because all smoke alarms in circulation spaces should normally be of the optical type. However, optical smoke alarms should not be sited close to bathrooms, showers or rooms from which steam may escape. Nevertheless, because these rooms normally open off circulation spaces, false alarms should normally be avoided by careful siting of the smoke alarms, rather than using ionisation chamber detectors.

Alarm Sound Levels

It is essential that, whenever any of the smoke alarms in the dwelling detects a fire, the sound level of the alarm (from either that smoke alarm or other smoke alarms interconnected with it) is sufficient to wake up at least the adult members of the household. The sound level in any bedroom is likely to be satisfactory if there is a smoke alarm in the bedroom, interconnected to all other smoke alarms in the dwelling. However, if this is not the case, the nearest interconnected smoke alarm to the bedroom, capable of sounding an alarm whenever fire is detected anywhere in the dwelling, should not be further than 3 m from the bedroom door.

In some dwellings, such as flats, maisonettes and houses in multiple occupation, doors to rooms may be fire doors, which tend to attenuate the sound from smoke alarms more than normal, domestic doors. In these cases, great care should be taken to ensure that the sound level in bedrooms is sufficient. In some houses in multiple occupation, the local authority may demand that the sound level at the bedheads in some or all bedrooms is 75dB(A) when the bedroom doors are closed.

This should be determined before finalising the number of smoke alarms required, because 75dB(A) is unlikely to be produced at the bedhead unless there is a smoke alarm within the bedroom.

If occupants suffer from severe hearing impairment, BS 5839 : Part 6 recommends that special alarm devices, such as high intensity beacons and vibrating pillow or mattress pads, be provided. User Instructions Occupiers should be provided with suitable instructions on the smoke alarms installed. BS 5839 : Part 6 sets out the information that should be contained in these instructions.

Certification

Once the installation has been completed and instructions have been handed over to the occupier (or the owner in the case of a house in multiple occupation), a certificate of compliance with BS 5839 : Part 6 should be issued. It should be noted that, because BS 5839 : Part 6 is only a code of practice, as opposed to a rigid set of regulations, it may

have been appropriate to deviate from its recommendations, subject to the agreement of the purchaser and any relevant enforcing authority (normally building control in the case of new dwellings or the environmental health officer in the case of houses in multiple occupation). The certificate should specify the type and grade of system, and should indicate any deviations from the recommendations of the British Standard in respect of this type and grade of system. A model installation certification is contained in BS 5839 : Part 6. The IEE Wiring Regulations further require the issue of a certificate for the entire electrical installation in the case of a new house.

www.avonbridgealarms.co.uk

0117 982 2088 24hr