



Office of the  
Deputy Prime Minister

Creating sustainable communities

# A guide to reducing the number of false alarms from fire-detection and fire-alarm systems



**CACFOA**  
The professional voice of the UK fire service

**BFPSA**  
British Fire Protection Systems Association



## Using this booklet

If an automatic fire-detection and fire-alarm system is used and maintained properly, its fast response to a fire that is just beginning can greatly reduce the risk to life and limit damage to property. However, features that provide this fast response can also cause false alarms.

We have produced this booklet as part of an initiative we are taking with the Chief and Assistant Chief Fire Officers' Association (CACFOA) and the British Fire Protection Systems Association (BFPSA) to reduce false alarms from automatic fire-detection systems.

The aim of this booklet is to reduce both the nuisance caused by false alarms and the unnecessary costs which may be a direct or indirect result of these alarms.

The definition of a false alarm is:

**'a fire signal resulting from a cause other than fire'.**

About 90% of automatic fire-detection and fire-alarm systems do not regularly cause false alarms. However, the remaining 10% are involved in most false alarms. Every false alarm causes disruption. This may affect your customer service, your productivity or the general routine of your organisation. The cost of false alarms in the UK is estimated to be about £1 billion a year. If you assessed the cost to **your** company you would probably be surprised. One medium-sized company found that the average false alarm at one of their sites cost them £1,200, and at another site costs amounted to around £126,000 in one year alone. However false alarms affect you, they could be a risk to the lives of others.



The guidance given in this booklet is designed to help you to keep your fire-detection and fire-alarm systems in good working order.

If you have been given this booklet, you will probably be:

- responsible for a building's fire protection;
- an employer;
- a tenant in a building which has several different occupiers; or
- someone else working in a building.

Make sure a copy of this booklet is available to the person responsible for the fire-detection and fire-alarm system. We give information about the 'responsible person' on page 6.

**Please play your part in reducing false alarms.**

## **The effect of false alarms on the fire and rescue service**

The fire and rescue service's main aim is to reduce the number of fire-related deaths and injuries by preventing fires from starting or spreading. We need the fire and rescue service to help us with emergencies such as fires and accidents on the road. Responding to false alarms diverts the fire and rescue service from their fire-prevention duties, or from dealing with real emergencies. They also disrupt work patterns and valuable training programmes.

Almost half of the calls to the fire and rescue service are false alarms, and most of these are false alarms from fire-detection and fire-alarm systems.



According to the 'Fire Statistics, United Kingdom', in 2002 there were nearly 280,000 false alarms from systems, and these types of call continue to increase. This places an unacceptable burden on the fire and rescue service, and attending large numbers of false alarms can affect the motivation of fire service staff.

False alarms not only waste the fire and rescue service's valuable resources, they also cause increased dangers on the roads. Accidents involving fire engines responding to false alarms can and do happen. These incidents, however rare, are unacceptable and need to be reduced.

If your fire-detection and fire-alarm system is well designed and maintained, it should produce no more than one false alarm a year for every 50 detectors fitted, and no more than one false alarm in any four-week period. For large fire-detection systems, we aim to reduce the level of false alarms well below that of one a year for every 50 detectors.

If your fire-detection system produces more false alarms than should be expected, the fire and rescue service would consider it to be unsatisfactory. The person you employ to design and install a new fire-detection system, or to maintain an existing system, must be competent (that is, they must have the necessary knowledge, training, experience and abilities to do the work). That person should be able to make sure that your fire-detection and fire-alarm system is designed, installed and maintained to the highest possible standard.



The level of competence of many contractors has been independently certificated under an approved scheme. Your local fire and rescue service or the BFPSA can give you details of approved schemes.

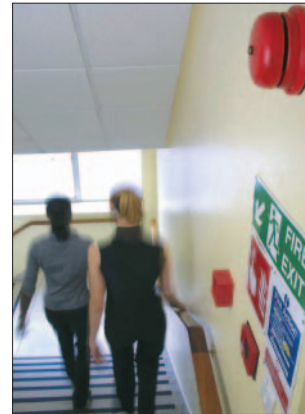


Your local fire and rescue service is always happy to give advice on any fire-safety matter including overcoming problems with false alarms. Pages 7 to 12 of this booklet also give advice on common causes of false alarms and the action to take.

## Fire safety and the law

Under fire-safety law, employers and others responsible for buildings must provide effective fire precautions to protect employees as well as people who may be visiting or using their property. Your fire-detection and fire-alarm system forms part of those fire precautions.

A system that causes false alarms may not be efficient as people will gradually lose confidence in the fire alarm and start to ignore its warning. So it is important that you recognise the importance of keeping the fire-detection and fire-alarm system in good working order and removing the causes of false alarms. The advice in this booklet will help you.



It is also worth remembering that if a genuine fire alarm is ignored (for example, because people mistake it for yet another false alarm), this can lead to death, injury and extensive damage. It is well known that many companies that suffer a serious fire will never effectively recover and will stop trading.



The owners, occupiers, or other person with control over a building with a fire-detection and fire-alarm system should agree which of them will be responsible for the system. That person should then nominate a suitable person who agrees to be responsible for supervising the system. The person nominated should have received appropriate training or have the skills, knowledge or experience needed to make sure that:

- the system remains in good working order and is properly maintained;
- faults are dealt with quickly and efficiently;
- those who have to take specific action when a fire alarm goes off have appropriate training (see 'Action to take' on page 9);
- false alarms are investigated and action taken to solve any problem;
- activities which may affect the system (for example, processes which may produce heat or smoke, redecorating or a change in manufacturing processes) are controlled; and
- maintenance or other work is carried out on the system only by a competent person.

If the person nominated needs training, you can get advice from:

- the company that installed the fire-detection and fire-alarm system;
- the company that maintains the system; and
- your local fire and rescue service.

If these organisations cannot provide training, you can get further help from the BFPSA. Their details are given on page 14 of this booklet.





## Causes of false alarms

False alarms from fire-detection and fire-alarm systems can arise from many different causes, most of which can be dealt with by careful planning.

Typical causes of false alarms are:

- pollutants in the air setting off smoke detectors;
- extremely high temperatures setting off heat detectors;
- vandalism or malicious acts;
- mistakes in using the system;
- the equipment being faulty or not being maintained properly;
- fire detectors or red 'break glass' boxes being in the wrong place; and
- the fire-detection system not being appropriate for the building or how it is used.

False alarms can come from three main devices – smoke detectors, heat detectors and 'break glass' boxes.

### Smoke detectors

Smoke detectors respond to smoke and any similar pollutants in the air. If you have smoke detectors in your building, you must make sure the people in the building know about them.

False alarms triggered by smoke detectors are often caused by:

- cooking;
- making toast;
- insects, particularly in the summer months;





- welding, soldering or similar activities;
- candles and open fires;
- steam;
- dust;
- aerosols; and
- a lack of effective maintenance and cleaning.



### Heat detectors

These are generally used in kitchens, boiler rooms and similar areas where smoke detectors may be too sensitive and cause false alarms. They are set to allow for expected temperature levels in the protected area, and will trigger an alarm if the temperature goes above the expected level. False alarms may be caused by high temperatures in the protected area, or sudden increases in temperature.

### Break glass boxes

'Break glass' boxes do not usually cause false alarms as a result of faulty equipment. However, the glass can be broken deliberately or by accident. If you think there is a high risk of this because of vandalism or where the box is, they can be fitted with a transparent flap or cover that has to be lifted before the glass can be broken.

The actual cause of a false alarm may be easily identified and corrected. For example, if the cause is something someone has done (such as dust coming from maintenance work), you can take action to prevent this from happening again. However, you may need to take a more formal approach to analysing the cause of the false alarm.





## Action to take

When the fire alarm sounds, everyone in the building should immediately follow the fire action plan (this plan must be well publicised within your building). A trained member of staff may then find out if there is a fire (you should have arrangements in place so that you will know quickly whether an alarm is genuine or false). If it is a false alarm, tell the fire and rescue service why it is a false alarm and be prepared to show them the cause. This will help them to deal with the situation in the shortest possible time.

If you cannot find the cause of the false alarm, follow the procedure described below.

- 1 Silence the fire alarm but do **not** reset the control panel as this will get rid of the information you need to investigate the cause of the false alarm.
- 2 Check the message on the control panel and find out where in the building the false alarm came from.
- 3 As soon as possible after the false alarm, visit that area and locate the break glass box, heat detector or smoke detector that set off the alarm.
- 4 Try to find out why the break glass box or detector was triggered. The information on pages 10 and 11 may help you, but you may need to investigate further to find out the real cause (for example, vandalism or accidental damage to a break glass box or insects in a smoke detector).
- 5 If you are having difficulty finding the detector that was triggered, it may be in a duct or above a false ceiling. If a plan showing where all detectors are is available, use it to find the detector. Break glass boxes should be easier to find as they should be in clearly visible positions.



- 6 If you cannot find the detector that was triggered, call in the maintenance company as they should know where detectors are within the fire-detection system.
- 7 If the control panel does not show where the relevant detector is, or if no detector was triggered, call in the maintenance company as the problem may be due to faulty equipment.
- 8 Accurately record all the information about the false alarm in the system log book. This is very important as you may need the information at a later date.
- 9 If false alarms continue, and you cannot find the cause or action you take is unsuccessful, analyse when the false alarms happen and where they come from. This will help you to see if there is any pattern that may help you to identify the cause (for example, cooking before meal times or a boiler switching on early in the morning).
- 10 Your investigations should show you that the false alarms are the result of faulty equipment, malicious acts, human error, or activities near detectors.

### **Equipment faults**

If you can't identify the cause of the false alarm, or if there seems to be a fault in the system, turn the alarm off but do not reset the control panel. (If you have to reset the control panel, make special arrangements with the company that installed or maintains your system to collect as much information as possible before the control panel is reset.) The information on the panel will help you to find the problem. If your equipment seems to be faulty, call in the company that installed or maintains your system so they can take appropriate action.



If your alarm system automatically alerts an alarm receiving centre (an ARC), contact the ARC straight away. Tell them you are having problems with your system and agree how they should handle any further alarms (to avoid needlessly calling out the fire and rescue service) until the problem has been fixed.

Effective, regular maintenance, including cleaning the inside and outside of smoke detectors, will help to prevent equipment faults from happening in the first place.

### **Malicious acts**

This cause can be the most difficult to identify and often needs to be investigated carefully. Examples of malicious acts include:

- unnecessarily breaking the glass in break glass boxes;
- unauthorised people having and using test keys for break glass boxes; and
- deliberately directing smoke (for example, from a cigarette) into a smoke detector.

### **Human errors**

Examples of human errors include the following.

- Building contractors carrying out hot or dusty work close to smoke detectors or heat detectors.
- The fire-alarm system not being switched off while its wiring is being altered.

Note: If you are planning on making changes to your fire-detection and fire-alarm system, consult your local fire and rescue service to find out if the changes would affect any fire-safety arrangements in the building. Also consider how the changes could affect the other fire precautions in your building.

- Unsecured control panels being activated, usually as a result of the panel's key or a similar device being left in the panel.

These incidents can usually be tackled by changing working practices (for example, issuing permits to work) or giving information and training to staff and contractors responsible for buildings.

### Activities near detectors

Many false alarms result from activities carried out near fire detectors, particularly smoke detectors. A common example is burning toast in a toaster. More examples are given on pages 7 and 8. This type of alarm can be tackled by carrying out the activity elsewhere, fitting a temporary cover on a detector while the activity is being carried out, changing the type of detector or moving it, or changing the way the fire-alarm system responds when a detector is triggered. If you use temporary covers on detectors, these should be fitted only by approved staff and removed **carefully** as soon as possible after the activity has ended. You can get more advice from the company that installed or maintains the system.



You should consider all the activities that go on in your building and develop a plan to avoid false alarms. Make sure you have proper arrangements in place for training staff on work processes and practices, the fire precautions you have, and how work processes and practices may affect the fire-alarm system if they are not carried out properly.



## Maintenance

Like all electrical systems, your fire-detection and fire-alarm system will be effective only if it is maintained and regularly checked by a competent person. Poor maintenance will not only lead to false alarms, it may also lead to a genuine fire alarm being ignored or missed. It can also reduce the life of the system. All these problems lead to extra costs for you. Guidance on maintaining your system, together with guidance on reducing false alarms, can be found in BS 5839 Part 1 – Code of Practice for design, installation, commissioning and maintenance of fire-detection and fire-alarm systems.

You can get a summary of the guidance given in BS 5839 Part 1, and advice about schemes that can help you assess the competence of contractors, from the website at [www.bfpsa.org.uk](http://www.bfpsa.org.uk) or by phoning 020 8549 5855.

## Where do I go for more help?

If you have followed the guidance in this booklet and false alarms are still causing a problem, your local fire and rescue service can give you advice. You should also ask the company that supplied, installed or maintains your system to investigate the matter and take appropriate action. The relevant company's contact details should be on or next to the fire-detection and fire-alarm system control panel or printed in the system log book. If you cannot find their contact details, BFPSA can recommend suitable organisations.



If your fire-detection and fire-alarm system has been provided as a condition of any fire-safety law, you may have to consult your local fire and rescue service before you make any changes to your system.



## Useful contacts

Local fire and rescue service:

Fire-alarm maintenance company:

BFPSA – British Fire Protection Systems Association  
Phone: 020 8549 5855  
Website: [www.bfpsa.org.uk](http://www.bfpsa.org.uk)

**Reducing false alarms will save you and the fire and rescue service money, will reduce wasted efforts and may save lives.**



## Notes

Use the space below to make any notes you need.

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## Acknowledgements

This guide has been produced by a forum made up of the British Fire Protection Systems Association, the Chief and Assistant Chief Fire Officers' Association and the Office of the Deputy Prime Minister. The forum would like to thank all those involved.

We have been able to use the photographs in this booklet with the kind permission of:

- West Midlands Fire and Rescue Service;
- 'Fire' Magazine; and
- British Approvals for Fire Equipment.



Office of the Deputy Prime Minister  
Eland House  
Bressenden Place  
London SW1E 5DU  
Phone: 020 7944 4400  
Website: [www.odpm.gov.uk](http://www.odpm.gov.uk)

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Published by the Office of the Deputy Prime Minister: Printed in the UK, February 2004 on material containing 75% recycled waste and 25% ECF pulp.

Product code 04FPD01976