How Your Fire Alarm Detectors Can Reduce Unwanted Alarms

Fire alarm detectors and manual call points are the main input to the fire detection and alarm system. They provide the means by which fire signals, both real and unwanted, are generated and transmitted. Fire detectors monitor the environment in which they are installed; it is important that the detector's location and performance are correctly matched to ensure optimum fire detection ability with minimal risk of unwanted alarms.

Selecting Detector Types to Limit Unwanted Alarms – There are many different types of detector, which operate on different sensing principles and offer specific performance related to the detection of fires as well as their immunity to certain sources of unwanted alarm. Therefore, it is important to select the correct detector for the application.

Detection Types[1]	Fire Performance	Unwanted Alarm Performance
Heat	• Respond slowly to developing fires • Should only be used if no other technology is deemed suitable for the risk	• Insensitive to smoke or smoke-like products • Won't produce unwanted alarms when installed in a temperature stable environment
Smoke[2]	• Respond quickly to developing fires • Well suited to most fire detection applications • Performance of ionization or optical types of detector differ, which needs to be matched to the risk	• Sensitive to smoke-like particles that may not be a real fire • Unwanted alarms possible from steam, aerosol spray, smoking, burning toast, cooking fumes and dusty electric fires, ingress of dust and insects, etc.
CO Fire	• Provide fast detection of smouldering fire risk • Have limitations in the detection of flaming fires	• Sensitive to ambient sources of CO • Unwanted alarms possible from vehicle exhaust fumes and gas from open fires and faulty appliances
Flame	• Respond to the radiation from flames • Used in the detection of flammable liquid and gas risks	• Sensitive to natural sources of radiation • Unwanted alarms possible from heating and cooking appliances, welding, modulated sunlight and heat radiated by hot bodies

[1] Other types of detectors such as beam, aspirated smoke or video fire are available

[2] Some smoke detectors use techniques that may minimise the risk of unwanted alarms. Reference should be made to the manufacturer when using such detectors

Multi-Sensor Fire Detectors – based on the combination of two or more sensor technologies aimed at minimising the possibility of unwanted alarms while maintaining reliable fire detection. Multi-sensor detectors usually have several modes of operation so it is important that manufacturers' application design guides are used to determine the correct mode.

Variable Detector Performance – detector performance can be adjusted, usually at the control panel, so as to reduce the risk of unwanted alarms for given periods. For example:
- A smoke/heat detector may be switched to a heat only mode
- Alarm verification delays may be enabled
- Smoke detector sensitivity may be reduced

During periods of reduced activity (e.g. when people are sleeping) the detection system reverts to its normal operating mode where system delays are disabled and a higher detector sensitivity is used.

Manual Call Points – seldom a source of unwanted alarms. However, in certain applications, the possibility of malicious operation needs to be taken into account and locally managed. Where there is a risk that manual call points may be inadvertently operated, consideration needs to be given to protecting them with a cover.

Siting of Detectors – very important in regards to unwanted alarms. In any given situation, likely sources of unwanted alarms need to be assessed (see the table above) before deciding on which type of detector to install and where to position it. For example, smoke detectors should not be cited near a source of steam such as kettles or shower cubicles. Likewise, heat detectors should not be placed in areas of excessive hot or cold drafts.

Typically a detector may be sited up to five metres away from a potential alarm source and still meet the British Standard.

Maintenance – plays an important role in ensuring that fire alarm detection devices remain in good functional order and perform as they were originally intended when first installed. When there are any changes of environment/risk or changes of use the detection type and siting must be reviewed to minimise risk of unwanted alarms.

The maintenance recommendations in British Standard, BS 5839-1, and any specific instructions given by the manufacturer for each type of detector and field devices should be followed.

Warning – Reduction in detector sensitivity always delays the response to a REAL FIRE